METT HANDBOOK

A GUIDE TO USING THE MANAGEMENT EFFECTIVENESS TRACKING TOOL (METT) SECOND EDITION GUIDANCE FOR USING METT-4

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FOREWORD

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Those concerned with conservation – protected area managers, NGOs, civil society members – are generally short of both time and money. So whenever we ask them to do something extra, we'd better be sure that it is both truly useful and as cheap and easy to fulfil as possible. The huge increase in interest in protected area management effectiveness arises from multiple causes: concern that many protected areas are failing in their primary conservation objectives, a need to show efficiency in cash-strapped times, the exploration of better ways to bring local communities more directly into management, or a simple desire to do better. Assessment of management effectiveness is now increasingly seen as essential. There are already a plethora of tools available to do so, ranging from highly complex and time-consuming monitoring systems to the kind of cheap and simple toolkits like the one described in this handbook. As a scientist I always want to see more data. But as a pragmatist, I recognise that complicated monitoring systems are often the first thing to be dropped whenever a protected area agency faces a budgetary shortfall. The world is littered with abandoned monitoring systems that have collected wonderful data for a couple of years and then been abandoned. Something that takes a couple of days every few years and minimal budget is better than a fancy monitoring process that no-one uses.

When WWF developed the Management Effectiveness Tracking Tool around the year 2002, we thought it would be a once-off methodology to measure a time-limited target for improving management effectiveness of forest protected areas, agreed by WWF and The World Bank. But then other institutions started taking it up as well, notably including the Global Environmental Facility along with many other government departments and NGOs, so that it has by now been applied in over 5,000 protected areas in more than 170 countries, by far the most successful assessment system in the field.

We are, naturally enough, delighted by the success. But our pleasure is also tinged with concern: that the tool is often applied sloppily, that in its original form it focused mostly on management with only minimal attention to outcomes – whether the protected area actually does what it is intended to do – and that several new issues have emerged since its design that also need more consideration.

During 2020, several of the originators of the METT undertook a complete revision, thoroughly updating by drawing on years of experience in different countries, turning it into an electronic tool and strengthening sections to assess social and environmental outcomes. At the same time, they have revised this accompanying handbook, which provides users with a thorough, step-by-step guide to best practices in application. It also links the METT to two associated tools, the SMART system for improving ranger monitoring and the SAGE methodology for assessing governance. WWF is proud of its long association with the METT, and I am delighted to see the publication of a new version of this handbook.

Jon Hutton
Global Conservation Director, WWF International

PREFACE

It is now twenty years since the first edition of the Management Effectiveness Tracking Tool (METT) was published, after lengthy and sometimes passionate discussions about its form and function. In 2021, we released METT 4, a fully updated, electronic version of the Tracking Tool in response to lessons learned in application around the world. This, the 2nd edition of the METT Handbook, provides background on management effectiveness and advice on best use of the METT.

Although originally designed to measure a single time-limited conservation target, the METT has somewhat to our surprise become the most widely used tool to measure protected area management effectiveness, applied many thousand times around the world. Surprise and consternation: although we are delighted to see so much interest in addressing management effectiveness of protected areas, we are aware that the METT has sometimes been used in ways that we never envisaged. The METT was designed to measure progress in management effectiveness at particular sites over time. In this respect, it has some clear advantages. It is a simple, cheap and flexible tool that can give a quick overview of the effectiveness of protected area management without requiring expensive consultants or taking up too much time for managers, rangers or others responsible for governance. On the other hand, it has clear limitations. The METT is usually run as a qualitative assessment and relies to a large extent on the judgement and honesty of assessors. It is better at addressing changes over time at a single site than detailed comparison of individual indicators between different sites (but it is often used for the latter). It is better at providing information about how well management is being carried out (the processes and outputs of management) than in showing whether that management is successful (the outcomes in terms of successful nature conservation and other values). Usefulness is also very closely connected to how well the assessment is carried out. A manager can sit in their office and fill out the form

METT training in Kenya in 2006.

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in a few minutes, but the results are likely to be inaccurate, lacking justification and will certainly have little buy-in from other stakeholders. Our experience suggests that a good METT process takes two or three days. It is also far better if the assessment is evidence-based, rather than simply opinion-based, and if a diverse group of stakeholders have a chance to input into the results.

The first edition of this Handbook was a response by the original authors of the METT to two factors. First, that quantity was not necessarily being matched by quality in the METT with assessors going through the motions rather than doing a professional job (e.g., when only one person completes the METT with no other protected area staff or other stakeholders involved). The requirement to complete the METT by some major donors has been very positive in ensuring that sites think about management effectiveness, but the flip side of this is that some people have rushed the assessment without taking it seriously. Secondly, when assessors are committed to best practice, they will often have a string of questions about how best to complete the assessment, and no additional advice was available. The need for greater guidance was emphasised by other researchers as well. Carbutt and Goodman (2013): "*We have noticed that a clear, emphatic and absolute statement on how to best apply the various assessment tools is lacking, because most publications address best practice methodology only in terms of 'guidelines' or 'recommendations'*". Coad et al. similarly note (2015): "*To improve the credibility of protected area management effectiveness scores, we suggest that standardized, robust operating guidelines need to be developed and applied…*"

The following Handbook is an attempt to provide such advice, using lessons learned to date, drawn from both our personal experience and from what others have found. This is certainly not the final word on the subject: one thing we have learned is that a couple of dozen simple questions are not actually that simple at all. If you use the METT and have comments, or have made modifications, or find things that do not seem to make sense, please let us know!

Sue Stolton, Nigel Dudley and Marc Hockings, October 2021

Contact: For more information, updates, to share METT experience and ask questions please see the METT Support Group Facebook page: https://www.facebook.com/groups/1578283049031666

The first version of the METT published by World Bank/WWF Alliance for Forest Conservation and Sustainable Use.
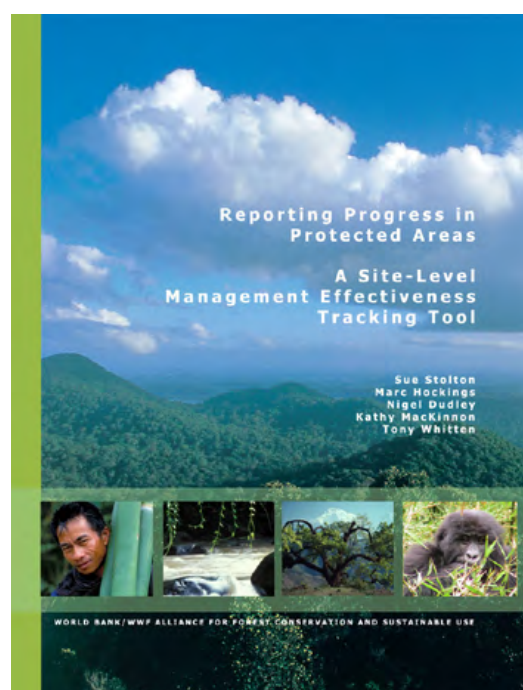
1. EXECUTIVE SUMMARY

The first version of the Management Effectiveness Tracking Tool (METT) was published by the World Bank/WWF Alliance for Forest Conservation and Sustainable Use ("the Alliance") in 2002, after a year of development. The tool was devised for a very specific purpose; to evaluate progress towards the Alliance's target of securing 50 million hectares of existing but highly threatened forest protected areas under effective management by the year 2005. Since then, three new editions have been published "officially", and many individual users have adapted the METT for their own purposes. Being open source, it has also been widely modified, shortened, extended and used in a variety of ways not foreseen by the original authors. This handbook provides general guidance on good practice in applying the METT, detailed advice on each of the questions and ways of integrating with other management tools, including SMART.

Photo: The METT has been used all over the world in both terrestrial and marine protected areas. Monte Leon National Park, Patagonia, Argentina

Following growing interest in protected area management effectiveness (PAME), in 1999 the World Bank/WWF Alliance for Forest Conservation and Sustainable Use set a target of: *50 million hectares of existing but highly threatened forest protected areas to be secured under effective management by the year 2005*. Various methods were used to measure the target, culminating in development of the Management Effectiveness Tracking Tool (METT), a simple, questionnaire type approach. The METT has since become the commonest PAME tool, used in over 5,000 protected areas covering over a fifth of the world's terrestrial protected areas by area in at least 127 countries.

The METT consists of two main sections: **datasheets** of key information on the protected area and an **assessment form** containing a questionnaire with four alternative responses to 38 questions, each with an associated score, a data field for notes and a justification for the answers, and a place to list steps to improve management if necessary. Each of the 38 questions is discussed in turn and advice given on interpretation and completion. Additionally, this edition of the Handbook includes discussion about linking the METT with other tools and approaches, particularly the SMART system used to improve ranger monitoring, which can also provide the kind of quantitative data that strengthens METT results.

Various versions of the METT exist, along with many local modifications. The latest global METT is available here.[1] The METT is strongest at measuring the effectiveness of management and weaker at reflecting overall conservation results, although the 2021 METT 4 version puts additional emphasis on estimating outcomes. The tool was designed primarily to track progress over time at a single site and to identify actions to address any management weaknesses, rather than to compare management between different sites. However, the development of a large global database of METT results has encouraged several comparative analyses, to identify those management processes critical to success.

Experience has shown that many users do not apply the METT as effectively as possible, in particular focusing solely on the score rather than the list of necessary next steps (a checklist of how management needs to change). In addition, there is confusion about interpretation of some of the questions. The new digital version of the METT addresses the first of these in that each stage needs to be completed before moving on to the next, thus assessors cannot pick and choose what they fill in. This handbook aims to improve the efficacy with which the METT is applied and thus address the issue of confusion. It includes detailed additional guidance on the application of the METT and best practices for developing, implementing and using the results of the METT. Best practices are summarised below.

Carefully plan the METT implementation

1. Plan the implementation process. Review the METT before undertaking the assessment and evaluate the information available to complete it. Then think about capacity and pre-assessment training needs, adaptation, timing, scope and scale, verification, etc.

2. Allow enough time to complete the assessment in full. A good METT cannot be done in a quick hour; most questions take serious thought and ideally discussion between several people. The first METT is likely to take at least a day, probably two. Subsequent repeat METTs may be a little quicker.

Do it properly and do it all

3. Complete all the METT including all questions on the datasheets and narrative sections related to the multiple-choice questions. The next steps section is essential as the steps identified create a quick check list of needed actions. The electronic version will not let you proceed without filling in next steps, but for example thinking carefully about next steps may be even more important than assessing current state of management.

4. Use quantitative data wherever available to support assessment, this is most important of all in the "outcomes" questions. Data from surveys, SMART patrolling and other sources can help to inform and improve the METT.

Adapt and translate

5. The METT is a generic tool designed for global use; it is unlikely to fit any one protected area perfectly. Adaptation is encouraged; ideally by keeping the basic format of the METT the same and adding to, rather than changing, the wording of the METT (e.g., providing additional advice on interpretation for local conditions or by additional questions).

Repeat the assessment

6. The METT is designed to track progress over time. Sites/networks planning to implement the METT should aim to repeat the assessment every few years. Ideally the METT should be an automatic part of annual planning, filled in once a year and the "next steps" identified 12 months previously carefully reiewed.

Consult and get consensus

7. The implementation of the METT should wherever possible include a wide range of rightsholders and stakeholders to aid insight into the assessment results; including people outside the protected area, such as local communities, will bring richer insights.

Build capacity and guidance

8. Although designed as a simple tool, implementing the METT may be the first time that protected area staff and other rightsholders and stakeholders have been involved in assessing protected area management effectiveness (PAME). Some capacity building is therefore advisable so that all participants understand PAME and why it is important.

9. As a generic tool the METT questions can be interpreted differently in different situations/jurisdictions. Developing a better understanding of the METT and how it can be implemented in a specific jurisdiction will help ensure valid results.

Verify results

10. Although designed as a self-assessment tool, METT implementation can involve various verification processes; from simple checking of completed METTs by external assessors, to more detailed field verification exercises involving data collection. Reaching consensus amongst multiple rightsholders and stakeholders itself helps to ensure that results are as accurate as possible.

Implement recomendations

11. Completing the METT is only the first step of the assessment; the implementation process should include adaptive management (e.g., a plan of action to implement results) and communications process to share results locally and globally.

12. Ideally, data should be shared nationally or globally, for example by submitting METT data to the Global Database on Protected Area Management Effectiveness[2] (GD-PAME) managed by UNEP-WCMC, which is mandated by the CBD to maintain the GD-PAME and use it for CBD reporting.

2. WHAT THE MANAGEMENT EFFECTIVENESS TRACKING TOOL IS FOR

METT 4 is an Excel-based tool to track progress in management effectiveness of an individual protected area over time. It is designed to be relatively quick to implement by protected areas staff and partners using existing knowledge and experience. It provides an overview of effectiveness including outcomes, assesses strengths and weaknesses in management and develops an action plan to address identified issues.

Photo: Management effectiveness training in Kenya

The METT was originally designed primarily as a quick way to track progress in the effectiveness of management in an individual protected area over time. This is still the main purpose today. The assessment consists of three main parts. First is a data sheet that collects basic information about name, size, habitat type, IUCN management category, number of staff etc, along with identification of main management objectives and principal threats and pressures. Secondly, management is assessed against a series of questions, based around the framework for protected area management assessment developed by the IUCN World Commission on Protected Areas. Most of the questions have four alternative answers and assessors choose the one that most closely matches the situation in their protected area. Thirdly, assessors fill in additional information by each question, including where possible data sources and justification for the answers given and, most importantly, action needed if the score is less than perfect.

Compilers can calculate a score, which provides a snapshot of the success or failure of management at the site and a list of actions needed to improve management.

The METT was designed to be relatively quick and cheap to use as compared with more detailed assessment systems. It can be filled in very quickly by an individual, but the results are likely to be suspect; it should take about two days to complete and involve a team of protected area staff and ideally other stakeholders, going through carefully, debating each point in turn and reaching consensus.

The accessibility and speed of the METT as compared with more detailed system means that there is a relatively high reliance on qualitative findings and expert judgement. This means that it is less suitable for comparing between sites than comparing in a single site over time, although because there is now a large database of METT results many people have used it to compare between sites or between regions of the world.

The METT was also originally designed primarily to measure management (planning, inputs, process and outputs) rather than outcomes: in the first version of the METT there was a single question about cultural and biological outcomes, which captured the *opinions* of participants about whether management was delivering objectives. In METT 4 much greater emphasis is given on assessment of conservation outcomes, in response to requests, although this is still not the main purpose of the METT.

If used correctly, the METT is a tool to capture important strengths and weaknesses of management without a huge outlay of time and resources, and to convert this into an action plan. The latter can be used as a quick guide to track progress over time until a full METT assessment is repeated a few years later.

The new digital version (using Excel) of the METT speeds up the process of inputting and analysing the data and also prevents users from only filling in part of the assessment. The METT is open source and we encourage users to adapt as necessary. Please let us know (through the METT Support Group Facebook[3] page: https://www.facebook.com/groups/1578283049031666) of any problems, new ideas or innovations you have made so these can be shared and our collective understanding of how to monitor progress on management effectiveness can increase over time.

3. EXPERIENCES FROM 20 YEARS OF METT USE

During years of widespread use, the METT has been adapted, praised and criticised widely. It has been used by many governments, nearly all the big international NGOs working on conservation issues, as well as by conservation conventions, major funders (most significantly the Global Environmental Facility, GEF), academics and researchers. Data on METT use have been collected and academics have published papers on the results. Most of these applications and analyses go way beyond the initial purposes and aims of the METT. They have shown the utility of the tool and but have also demonstrated weakness and gaps in the design and particularly in the process by which the tool is used.

Photo: Management, monitoring and assessment are vital activities for any protected area. Green turtle tagging and monitoring, Philippines.

3.1. OVERVIEW OF METT USE

Since the initial trial of the "proto-METT" in 16 protected areas in 2001 (see section 7.1) to date the METT has been used in around 5,000 protected areas covering over 4.2 million km² in 127 countries around the world according to data held in the METT database (see Sections 2.4 and 7.4). So, in terms of area the METT has been used in over a fifth of the world's terrestrial protected areas. This widespread use is related to several factors including:

1. It is simple and cheap to use (objectives which influenced its initial design and development) and there are few alterative tools with similar objectives.

2. The conservation outreach of the institutional developers of the METT (WWF and the World Bank) and the many organisations which have since used /promoted the METT.

3. Use by the Global Environment Facility (GEF) for monitoring projects in protected areas (see box 1).

At its most basic, implementation can take little more than a few hours by someone (e.g., a manager or project officer) with intimate knowledge of the protected area being assessed and no equipment is required beyond a computer – or even just a pencil and paper if a hard copy is used. This is not ideal though, and we would recommend a more comprehensive process.

The fact that the METT was the initiative of a major conservation organisation (WWF) and a major conservation funder (the World Bank) has undoubtedly been a factor in its widespread uptake. The World Bank has been using various versions of the METT in monitoring its projects since 2001. The Global Environment Facility (GEF) made the METT mandatory for use in all projects in protected areas funded from GEF-3 (2002-2006) grants onwards. In 2003, WWF started a serious attempt to use the METT in connection with all its projects involving forest protected areas. Results from the first assessment (Dudley et al., 2004) were presented to the Seventh Meeting of the Conference of the Parties (COP-7) to the Convention on Biological Diversity (CBD) in 2004 and helped to persuade CBD signatories to include the need for assessment of management effectiveness in the CBD's Programme of Work on Protected Areas (see box 1).

Many other institutions have also adopted and/or adapted the METT. Country adaptations have been made by over 20 organisations and governments (see section 7) including for example Bhutan, Indonesia, Jamaica, Zambia, Namibia, India, Papua New Guinea and South Africa. Other conservation NGOs such as Conservation International (Pauquet, 2005), Wildlife Conservation Society (see for example Heffernan et al., 2004), IUCN,[4] Zoological Society of London (for example three METTs applied in the Tsavo ecosystem in 2015), USAID (LESTARI project),[5] and Space for Elephants Foundation (SEF, 2012) have also used and adapted the METT, as have funding bodies such as the Critical Ecosystem Partnership fund (CEPF, 2012 and Burgess et al., 2015) and conventions including the Ramsar Convention on Wetlands (Ramsar, 2015). The World Bank developed an equivalent system for marine protected areas based on the METT (Staub and Hatziolos, 2004). The basic structure of the METT has also been used in the development of tools such as the UNDP Financial Sustainability Scorecard (UNDP, 2010).

Box 1: The key players in developing the METT

Take-up of the METT has been driven by several key institutions:

IUCN World Commission on Protected Areas (WCPA): The METT was originally developed from work carried out by the IUCN WCPA task force on management effectiveness (see section 7.1). The task force went on to help develop and promote PAME assessments in general and the METT in particular during the early years of its development. Those involved have continued to implement the METT across the globe.

Convention on Biological Diversity (CBD): The Programme of Work on Protected Areas (PoWPA) asked Parties to ... "*expand and institutionalize management effectiveness assessments to work towards assessing 60 per cent of the total area of protected areas by 2015 using various national and regional tools, and report the results into the global database on management effectiveness...*" (CBD, 2004; also see Hockings et al., 2015 for an overview of PoWPA targets). By 2014, Coad et al. found over 17 per cent of countries had already met this target. The METT was one of the most commonly used tools and the frequency of PAME assessment was highest in tropical forests, where 45 per cent of protected areas have been assessed, which possibly reflects wide use of the METT in these areas due to its initial purpose and targets to assess PAME in forested protected areas.

Global Environmental Facility (GEF): The METT is the first area-based tracking tool to become a requirement for GEF-financed operations. METTs for all protected areas supported by a project are submitted at three stages (i.e., three times) during implementation: (i) at endorsement for full-sized projects (FSP), or approval for medium-sized projects (MSP), (ii) at project midterm and (iii) at project completion (Swartzendruber, 2013). At both the project and portfolio level, the GEF is using the METT as a proxy for biodiversity status and condition and as a measure of one key contributing factor towards ensuring the sustainability of a protected area system. Effectively managed individual protected areas must be considered a cornerstone of a sustainable system, notwithstanding key aspects of sustainability such as financing, institutional sustainability and capacity, and ecosystem and species representation that may not be directly assessed at the system level (Zimsky et al., 2010). The GEF thus assumes that project interventions leading to improvements in protected area management will have a positive impact on biodiversity (Coad et al, 2014). The GEF supports this assumption with evidence from studies, such as one carried out in Zambia, using the adapted METTPAZ (a METT adapted for protected areas in Zambia), which found that increases in METT scores were correlated with improvements in biodiversity outcomes (Zimsky et al., 2010). The GEF has made a number of adaptations to the METT for its own use.

World Bank: The World Bank used the METT for reporting on all its protected area projects and was a major mover in the wider uptake of protected area assessment by the GEF and CBD.

WWF: WWF used the METT in over 200 forest protected areas in 37 countries during 2003-4 (Dudley et al., 2004), and again in over 100 protected areas in 2005-6 (Dudley et al., 2007). The results of the METT helped WWF to identify minimum management standards for application in its protected area projects and also helped to shape the work programme and targets for WWF's global programme (Dudley et al., 2007). More recently, the METT has been used extensively by WWF and partners as the first stage in the Conservation Assured | Tiger Standards (CA|TS) development (see section 5.2).

3.2. STUDIES USING THE METT TO UNDERSTAND MANAGEMENT EFFECTIVENESS

The METT is designed primarily to track progress in PAME over time and to identify actions to rectify any weaknesses in management. It was not designed as a way of comparing management between different sites. Nonetheless, the existence of a growing database of METT results (see section 2.4) has encouraged researchers to use the METT as a way of identifying more general information on protected area strengths, weaknesses, regional variations and progress over time. Whilst noting the limitations of using METT data in this way (section 7) these studies nonetheless provide some useful pointers for management and show an additional use of the METT.

Soon after the METT was first developed, during 2003-2004, WWF carried out two analyses of METT data, drawing on successive applications in forest protected areas (Dudley et al, 2004; Dudley et al, 2004). Analysis of around 200 forest protected areas suggested that management effectiveness tended to increase with length of establishment and pinpointed important regional differences, with management at that stage being particularly weak in Latin America. Key threats were from poaching and illegal timber extraction, encroachment and over-collection of non-timber forest products. Strengths and weaknesses of management were highlighted, along with those aspects of management which correlated with success, as outlined in table 1 below.

Table 1: Results from early analyses of METT application in forest protected areas

Management strengths	Management weaknesses	Correlation with management success
Achieving legal status	Social relations	Enforcement capacity
Design	Budget management	Staff numbers and funding
Boundary demarcation	Monitoring and evaluation	Education and awareness-raising
Resource inventory	Law enforcement	Monitoring and evaluation
Objective setting		IUCN category – stricter categories better

Enforcement capacity emerged as the strongest indicator of success (which may reflect the sites that WWF was working in at the time), but also an area where many protected areas were failing. Monitoring and evaluation was similarly important but often underdeveloped. Although the management objectives (i.e., IUCN protected area management category) correlated strongly with success, with stricter categories generally being considered more effective at meeting management goals, this was based on a small sample of the less strict categories (V and VI). Presence of other designations (World Heritage, UNESCO Man and the Biosphere or Ramsar) conversely had no statistical links with performance.

In 2007, another METT analysis was carried out by WWF, drawing on results from over 330 protected areas in 51 countries, and from assessments carried out in 2004 and 2006 (Dudley et al, 2007). Results closely matched the earlier two studies. As before, the strongest association between effectiveness and management related to law enforcement, control of access, resource management, monitoring and evaluation, maintenance of equipment, budget management and existence of annual work plans, all elements of a well-regulated and managed reserve. A stricter IUCN category was again associated with a more effective result while international designations such as recognition as a natural World Heritage site conversely had little apparent influence on success. Consumptive biotic use, predominantly poaching, was identified as the most significant pressure. And once more, results seemed to indicate an increasing trend towards effectiveness over time.

Analysis of METT results shows that well trained staff are vital for effective management.
SMART Patrol Rangers Training, Mae Wong and Klong Lan National Park, Thailand.

There was a considerable gap before the METT was assessed again at a global level. In between there were a number of important overall assessments of PAME data, with a substantial proportion coming from METT. Most significantly, a global study by Leverington et al. (2010), with over 20 per cent of the results coming from METT assessments, found that the strongest management factors related to legal establishment, design, legislation and boundary marking and to effectiveness of governance; while the weakest aspects of management included community benefit programmes, resourcing (funding reliability and adequacy, staff numbers and facility and equipment maintenance) and management effectiveness evaluation. Factors most closely correlated with positive outcomes for conservation included staff skills, constraint or support by the external civil and political environment, achievements of outputs and adequacy of law enforcement. This assessment, which covered all protected area biomes, identified greater importance for overall policy context and governance quality but otherwise closely mirrored the earlier and much smaller forest METT samples.

Other studies used the METT to link more generally with effectiveness of outcomes. Nolte and Agrawal (2012) only found rather a weak link between high METT scores in the Amazon and likelihood of fire.

A later global study focused on the number and distribution of applications of PAME, and the utility of PAME in relation to the achievement of Aichi Biodiversity Targets (CBD, 2010), with less emphasis on the results (Coad et al., 2013). A major analysis of METT data was undertaken in 2015, principally looking at changes in management effectiveness over time (Geldmann et al, 2015). By the time of this assessment, some 1,934 METT results were available, including 722 with repeat data from the same protected area. Analysis confirmed the earlier suggestion that protected area management effectiveness tends to improve over time, with 69.5 per cent of those analysed showing an increased overall score over time. Larger and more threatened protected areas tended to show the greatest improvement, and those with initially low scores also tended to improve. The authors conclude that the common-sense assumption that additional effort and resources can lead to improved management effectiveness is frequently correct.

The GEF also carried out an assessment of METT use in 2015 (GEF, 2015). A total of 2,440 METTs were reviewed from 1,924 protected areas in 104 countries; of these a subset of 275 protected areas in 75 countries with at least two METT assessments were used to assess changes in PAME over time. The reliability of the METT as a monitoring tool was also considered and field assessments were undertaken in seven countries across three regions. The assessment of results (using only those METTs more than 50 per cent complete) found the highest individual mean scores were legal status, protected area boundaries, and protected area design. The lowest mean scores were linked to the contributions of commercial tourism to protected area management and involvement of local communities and indigenous people in protected area decision making. When looking at changes over time, the greatest improvements were observed in the adequacy of management plans, law enforcement, protected area regulations, resource inventory and protected area objectives; all which reflect the substantial inputs of GEF into protected area management.

In 2015, WWF updated and reviewed the METT assessment results of PAME in their priority places (a series of areas identified by WWF as having exceptional ecosystems and habitats). Average PAME scores (where 3 is the highest level of effectiveness) in WWF priority places ranged from 1.29 to 2.28 with only four places out of 27 having scores over 2, suggesting most protected areas in their portfolio still needed to improve management (Stephenson et al., 2015).

In 2017, METT species population trends in protected areas were compared with METT scores, showing a positive relationship between capacity and resources and vertebrate abundance (Geldmann et al., 2017). A year later, the METT was one of the databases used to identify major threats to protected areas (Schulze et al., 2018. In addition, many studies of national or jurisdictional groups of METT results have been carried out (see section 7).

Global METT data are not evenly distributed (see section 7.4). The METT was initially designed, and has been primarily used, to measure conservation funding impact, so that it has probably been biased towards underperforming protected areas, identified as requiring additional support (Nolte and Agrawal, 2012; Coad et al., 2014; Stephenson et al., 2015). As such, claims about the relative effectiveness of protected areas using METT results must include information on and analysis of factors such as the sample size and location of the areas being assessed to ensure the context of the results are correctly understood.

3.3. USING THE METT TO INCREASE EFFECTIVE MANAGEMENT

In addition to reviews of the results of the METT the two most fundamental questions related to 20 years use of the tool are:

1. Does using the METT help increase the management effectiveness of protected areas?

2. Do the METT results correlate with other indicators of protected area effectiveness in terms of outcomes?

In relation to the first question, a clear strength of the METT is that it allows for progress to be measured over time in relation to specific management issues (Higgins-Zogib and MacKinnon, 2006). If the METT is to have a role in increasing PAME and for instance in helping countries achieve CBD targets for management effectiveness (see Stephenson et al., 2015), this implies that the METT findings will be reflected in subsequent management (e.g., through adaptation, funding or action plans). It would be naïve to assume that all METT assessments have fed back into management, but there is good evidence that assessments are increasingly being used as steppingstones towards better management. This positive relationship is most evident in regional/jurisdictional

use of the METT, with examples provided in a range of reports (see section 7.3 and case studies throughout).

The second question relates to the validity of the METT results and the relationship of those results to conservation actions. As noted, the METT does not focus primarily on outcome assessments but rather whether the core components of effective management are in place to achieve conservation. As Coad et al. (2015) note: "*It is important to understand the causes of success or failure of management: without such an analysis, attempts to improve performance may be ineffective. The rationale for PAME, while focused on facilitating effective management rather than building a scientific evidence base, is therefore, in part, to understand the impacts of protected area management*". The METT can thus be a useful contributor to a range of datasets, rather than providing the sole dataset, to help practitioners assess conservation outcomes (see for example Forrest et al., 2011 and Henschel et al., 2014). The most detailed paper on impact evaluation in protected areas was published by Coad et al. in 2015. This looked at the impact of protected area management on biodiversity outcomes. It used the whole dataset of PAME results held in the Global Database for Protected Area Management Effectiveness (see section 2.4), which at the time held almost 18,000 PAME assessments and in addition assessed the peer reviewed literature on how PAME data had been used in impact evaluation. The authors found that the paucity of data from appropriate counterfactuals (i.e., a "counter-to-fact conditional" such as the status of an area if it had not been declared a protected area, or certain management activities had not happened) means that the PAME data are not ideally suited to the needs of scientific impact assessment. However, they concluded that: "*When suitably combined with independent measures of PA impact that have employed appropriate counterfactual methodologies, PAME data can help increase our understanding of the impact of aspects of PA management on conservation outcomes*" (Coad et al., 2015).

Overriding both the above questions is the need to be confident that the METT score does indeed provide a useful reflection of management realities. One particular concern relates to deliberate (or even subconscious) manipulation of results in projects aimed at strengthening management by scoring harshly at the beginning and more generously at the end, to show improvement and keep donors satisfied. In the research carried out by Geldmann et al (2015), which focused on 722 sites that had completed at least two METT assessments, the authors specifically addressed the criticism that METT scores are not an accurate reflection of reality on the ground. They note that in general most repeated METT assessments produce scores that suggest improvement in management over time, as would be expected if increased METT scores were indicative of real improvements, but some 30 per cent experienced no change, or even declines, in overall scores. They conclude that this "*is a considerable proportion had there been systematic manipulation of scores*". The authors noted that although this: "*does not represent definitive causal evidence that scores are not manipulated, it does suggest that at least some of the observed changes can be attributable to actual changes in management effectiveness on the ground*".

There is also little evidence that protected area staff routinely inflate scores to make themselves look better although definite trends in reporting can be observed. Carbutt and Goodman (2013) assessed use of the METT in South Africa. They noted that field staff members tend to be so closely involved with day-to-day activities that they lose objectivity and tend to be too negative and score low. Senior management come with a more strategic viewpoint and, in the absence of the day-to-day realities, tend to score too high. Hence, they stress the need to encourage a range of viewpoints and opinions and to facilitate dialogue until a consensus score is reached. Similarly, Zimsky et al. (2010) found that when completed using a rigorous process in Zambia, the METT was assessed as a suitable performance metric for PAME, backing up the findings of WWF's analysis of METT results in 2004 and 2006 (Dudley et al, 2007).

3.4. GLOBAL DATABASE OF METT RESULTS

PAME assessments are recorded in the <u>Global Database on Protected Area Management Effectiveness</u>[6] (GD-PAME) developed by the University of Queensland and now managed by UNEP WCMC. Countries are encouraged to provide information to this database in the CBD's decision <u>COP X/31</u>[7] (2010), which "*... invites Parties, taking into account the target for goal 1.4 of the programme of work, which calls for all protected areas to have effective management in existence by 2012 using participatory and science-based site planning processes with full and effective participation of stakeholders, and noting that to assess the effectiveness of the management, specific indicators may also be needed to: (a) Continue to expand and institutionalize management effectiveness assessments to work towards assessing 60 per cent of the total area of protected areas by 2015 using various national and regional tools and report the results into the global database on management effectiveness maintained by the World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP WCMC)*".
There is also a specific METT database which contains most of the known METT assessments conducted by the major users (GEF, WWF, Critical Ecosystem Partnership Fund) and assorted other contributors, which is managed by UNEP-WCMC. The data and structure of the database are in the process of being error checked, made user-friendly and more intuitive. Many organisations have provided METT data and funds for data entry over a period of years, mainly in the form of short-term projects. At present, there is no long-term funding in place to maintain the database, although UNEP-WCMC has committed to host the METT and GD-PAME datasets and to link them to the World Database on Protected Areas (WDPA) so that they have an institutional home and will endeavour to make the data available through the online portal protectedplanet.net, providing that the data providers have given consent.

The centralised database is the most efficient way to maximise the utility of the compiled METT data for the widest audience. The crucial next step to ensure that data from METT assessments are compiled, checked and available for management and research purposes is to solidify the long-term plan with the consent of data providers and secure long-term funding.

To enable a cost-effective, swift and efficient data entry process the following suggestions should be taken on board once the project has been agreed:

1. Provide an "assessment list" including the protected area name, country, date of assessment and WDPA ID. A checklist such as this is a basic safeguard for ensuring that all the data have been provided, and that all data will be entered correctly.

2. Organise data into protected areas folders and country folders, count how many assessments there are and identify what version of the METT has been used (e.g., 2002 version (METT 1), 2007 version (METT 3), or the latest version from 2020 (METT 4), variations or modifications, etc) and include this information in the "assessment list". Also check carefully for duplicate files and remove them. If the data entry team has to trawl through hundreds of files just to work out what is there, this will add days or weeks to the project, increasing the cost immensely.

3. Be aware that translations will add time to the data entry process. Assessments in English are straightforward, and it may be worth considering translating into English before passing over the data, depending on the language. Non-Roman script and non-Romanized languages are the most difficult to process as the requisite skills are less likely to be present within the team (e.g., Russian, Vietnamese, Greek, Chinese).

4. There is a standard process developed for adding results from the 2002 version (METT 1) and 2007 version (METT 3), and the database has a limited capacity for modified versions and variations. If the standard questions have been modified or additional questions have been added, only the scores for questions that match the standard METT 1 and METT 3 will be entered. Inputting data from METT 4, which will usually be in electronic form, should be far easier.

Case study 1

R-METT: Ramsar Convention on Wetlands

Convention on Wetlands Secretariat

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Corrubedo National Park in Spain.
A Ramsar wetlands site

The Ramsar Convention on Wetlands is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands, their resources and ecosystem services. One of the key obligations of Contracting Parties is to identify priority wetlands in their territory, to designate them as Wetlands of International Importance ("Ramsar Sites"), and to ensure their conservation and wise use. Worldwide, there are presently about 2,500 such Ramsar Sites. For wise use to be ensured, site managers must be able to anticipate new issues and to respond to them rapidly and effectively. The need for regular and open assessments of the effectiveness of management, allowing site managers to learn from both successes and failures, has thus been recognised as an important component of Ramsar Site management.

After a period of discussion, review and field testing by the Ramsar Convention, the Ramsar Site Management Effectiveness Tracking Tool (R-METT) was adopted at the 12th Meeting of the Conference of the Parties to the Convention in 2015 (Ramsar COP12 Resolution XII.15). The decision encourages Contracting Parties that do not already have effective mechanisms in place to consider using the R-METT. The R-METT is based on the 2007 version of the METT with some adaptations specific to the needs of the Convention and wetlands. The adaptations are:

- **Data Sheet 1b: Identifying and describing values from the Ecological Character Description and the Ramsar Information Sheet.** This provides information on the ecological character of the site including the ecosystem services that it provides, and the criteria under which the site qualifies as a Wetland of International Importance.

- **Additional multiple choice questions.** Three additional questions have been added on ecological character description, development of a cross sector management committee and the effectiveness of communication mechanisms with the Ramsar administration.

- **Data Sheet 5: Trends in Ramsar Ecological Character (including ecosystem services and community benefits).** A A new section which provides information on trends in the ecological character of the site over the past five years, including the ecosystem services that it provides, and the criteria under which the site qualifies as a Ramsar Site.

4. BEST PRACTICES WHEN IMPLEMENTING THE METT

Over the last 20 years the METT has been used in protected areas in over 120 countries worldwide. Many of the results have been recorded and analysed, and much of the data gathered has been used to review results and draw out recommendations on the aims, content and process of the METT. Furthermore, other PAME assessments have taken place worldwide, using a multitude of tools. As such PAME has proven to be a valuable management tool where the process is robustly implemented and information is interpreted within the context of local decision-making (Coad et al., 2014). This third section of the handbook looks at a range issues related to the process of carrying out the METT. It identifies a number of best practices to ensure valid and useful results.

Photo: Implementing the Bhutan METT +

4.1. TYPES OF IMPLEMENTATION

The use of the METT can be divided into three main types:

1. Part of a jurisdictional (e.g., protected area system, category or biome type) approach to PAME usually instituted by the protected area agency (e.g., Bhutan, Indonesia, Jamaica, Namibia, South Africa, Zambia etc) or type of protected area (e.g., Ramsar site, marine protected area)

2. Part of an NGO-led project (e.g., WWF and a range of other NGOs, see section 7.1)

3. For monitoring large-scale funding impacts (e.g. GEF, World Bank, CEPF).

Ideally, PAME should be seen as a normal part of the process of management, with management actions regularly reviewed and adapted to fit changing circumstances, as outlined in the first type given above. The art of protected areas management is still quite new and there is much to be learned; adaptive management is thus particularly important. PAME can help provide managers with two vital pieces of information to guide adaptive management:

1. Highlighting management practices that are failing to achieve desired results and the steps needed to address these.

2. Providing renewed confidence in practices that are working effectively.

Put simply, adaptive management describes the process by which information concerning past activities can be fed back into management to improve performance in the future (see for example Biggs et al., 2011) – the METT has been specifically designed for such a process.

The second and third types of use described above are often a result of the METT being used as a performance indicator by conservation organisations and donors. This may encourage funding recipients to deliver overly positive self-assessments at the end of a project (Coad et al., 2014) , although note the above discussion suggesting that this is not a general problem. As Carbutt and Goodman, 2013 note: "*Management effectiveness assessments should not be seen merely as a 'paper exercise' to meet reporting obligations. Rather, they should be undertaken objectively and with sober judgement and diligence to ensure that the effectiveness score achieved represents a realistic picture of management practices and processes, in the absence of hard quantitative data*". Thus, where assessments are conducted as part of donor funding requirements, donors should insist on procedural standards being met and provide specific funding for assessments within project budgets (Coad et al., 2014), making the use of the METT a useful tool rather than just a reporting task (Zimsky et al., 2011).

4.2. LESSONS LEARNED AND BEST PRACTICES

A rapid self-assessment tool is always likely to attract criticism that its implementation could be biased, with results being primarily qualitative and of limited use in understanding PAME (Cook and Hockings, 2011). One way to ensure better data collection when using the METT is to conduct the assessment under strict and consistent operating conditions, facilitated by capacity building of those undertaking the assessment, to ensure that implementation is robust, objective and reputable (Carbutt and Goodman, 2013, Coad et al., 2014). Many protected area managers and staff have noted that the major benefits of PAME have come during the assessment process rather than from any formal report produced as a result, so getting the process right is critical to success (Hockings et al., 2015).

While the latest version of the METT (METT 4) puts greater emphasis on assessing outcomes and on use of quantitative data, these issues remain. Many of the most

important benefits may emerge in terms of increased understanding among protected area staff themselves, and among any other stakeholders involved, rather than from any written report or score.

The IUCN World Commission on Protected Areas (WCPA) has reviewed the different processes to undertake PAME, and assessed their pros and cons (Hockings et al., 2006 and Hockings et al., 2015). Best practices specific to the METT are outlined in the boxes and discussed in more detail in the paragraphs below (Stolton et al., 2019).

4.2.1. CAREFULLY PLAN THE METT IMPLEMENTATION

Best practices:

1. **Plan the implementation process. Review the METT before undertaking the assessment and evaluate the information available to complete it. Then think about capacity and preassessment training needs, adaptation, timing, scope and scale, verification, etc.**

2. **Allow enough time to complete the assessment in full. A good METT cannot be done in a quick hour; most questions take serious thought. The first METT is likely to take at least a day, probably two. Subsequent repeat METTs may be a little quicker.**

The METT is only useful if done properly, and the quality and objectivity of the assessment process should be considered if the results are to be used in site, national or international reporting (Knights et al., 2014). A little time spent collating evidence and planning implementation can ensure the validity of results.

Before even starting to plan implementation, managers and others should review the content of the METT, work out what evidence is available relevant to each indicator and then assemble this evidence to have it at hand during the assessment discussions.

What follows here are a range of process orientated practices which should be considered before completing the assessment. Although intended to be a rapid and cost-effective tool the time allotted to undertake the assessment should allow for thorough deliberation of the results (Coad et al., 2014).

4.2.2. DO IT PROPERLY AND DO IT ALL

Best practices:

3. **Complete all the METT including all questions on the datasheets and narrative sections related to the multiple-choice questions. The "next steps" section is essential as the steps identified create a quick check list of needed actions.**

4. **Use quantitative data wherever available to support assessment, this is most important of all in the "outcomes" questions.**

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It is very important that monitoring activities and results are noted in the comments/ justification column of the METT to explain how METT questions are scored. Mangrove monitoring, Mafia Island, Tanzania.

The METT is relatively short, with a minimum of essential guidance. Those in charge of implementation should read and ensure this guidance is followed (as noted above pre-assessment training may be needed to explain how to implement the METT) and, where a project manager exists, a few simple checks can be made to assess quality of completed results including:

- Number of people involved (data sheet 1), where possible assessments should be carried out with a range of stakeholders and rightsholders, including protected area managers, local government officials, partner NGOs, local community representatives etc.

- Quality of completion of the two narrative boxes accompanying each question in the multiple choice questionnaire

- Evidence of use of the results to develop a plan of action to address identified areas of weakness in management.

There is sometimes a misconception that only the multiple-choice questions are part of the formal METT assessment process. This is erroneous and all parts of the METT are an important contribution to the assessment of PAME, especially in providing metadata. However, a trend towards incomplete METTs has been noted; Burgess et al. (2014) found that in an analysis of 3,600 METT data sheets, the "additional" questions (those marked a, b, c in the multiple-choice section of the METT) are generally not answered. A review by the GEF of the use of 2,440 METTs also noted that many were incomplete (GEF, 2015). This issue is hopefully resolved in METT 4, at least when filled out electronically, because the compiler can only proceed to the next question when all constituent parts of the previous question have been answered.

Whilst the whole METT is important the guidance notes state that: "Questions that are not relevant to a particular protected area should be omitted" (Stolton et al., 2007). Such an approach is clearly common sense for a tool which has been developed for global use in the very diverse world of protected areas. However, this simple guidance has clearly

not always been followed, with the 2015 analysis of the GEF's implementation of the METT noting: "*on the measure related to indigenous people, the structure of the METT does not allow evaluators to distinguish between PAs where no indigenous people were present, and PAs where indigenous people issues were relevant but not addressed. In both instances, this measure would receive a score of '0'.*" (GEF, 2015).

In particular, the space provided for the narrative (comments/justification and next steps) is a vital component; although one that has often been missed. Whilst no longer possible to avoid answering this question in METT 4, it should be noted that this is in many respects the most important part of the assessment, providing a list of tasks to be added to management and work plans and addressed to address any current failings in management effectiveness.

Because of the dominance of input and process questions, if the outcome question and additional points are completed without sufficient detail to back-up the claims made, then the ability for the METT to serve as a tool to assess biodiversity outcomes is even more seriously limited. Zimsky et al. (2010) note that: "*the METT fails to require those who fill out the form to justify outcome scores with concrete data of biodiversity status, threat reduction*"; however, the failure here is perhaps more to do with the lack of oversight in completing the METT and lack of guidance (e.g., training of those undertaking or overseeing the assessment) to complete the METT properly. METT 4 focuses further attention on outcomes, although this is not the primary purpose or strength of the METT system.

In many cases, expert-based knowledge is the only source for making assessments. A study in Australia, which has one of the world's better developed and researched protected area networks, found that in 25 per cent of management effectiveness assessments, practitioners had insufficient evidence to assess their management performance and even where sufficient information was available 60 per cent of assessments relied solely on experience to judge the success of management approaches (Cook et al., 2009). Thus, although quantitative data should be used wherever possible to justify assessments, qualitative data will in many cases inevitably form the basis for much of the reporting. In these cases, additional steps related to who undertakes the assessment (see 3.2.5) and processes of verification (see 3.2.7) are particularly important to ensure that an accurate and valid assessment is made.

4.2.3: ADAPT AND TRANSLATE

> **Best practice:**
>
> 5. **The METT is a generic tool designed for global use; therefore, it is unlikely to fit one protected area (or system, type etc) perfectly. Adaptation is encouraged; ideally by keeping the basic format of the METT the same and adding to, rather than changing, the wording of the METT (e.g., providing additional advice on interpretation for local conditions or by additional questions).**

The METT is open source and people are free to adapt however they wish. There are some advantages in ensuring that its core questions are always included, to help facilitate comparison between assessments made in different parts of the world, or different protected areas within a single network. Adaptation is still possible within this framework and can take two forms:

1. Adding questions to cover issues missed by the original tool;

2. Adding detailed instructions to the existing questionnaire, in order to relate the METT better to local circumstances.

Marc Hockings presenting at the training session for METT implantation in Indonesia.

Hockings et al., 2015 state that: "*The more clearly the categories [i.e., responses to PAME questions] are defined for local circumstances, the more accurate and consistent will be the responses*". They go on to discuss how the use of subjective terms – such as "adequate", "sufficient" and "appropriate" – have been deliberately chosen in tools such as the METT to ensure that assessment categories can be applied to protected areas in very different contexts. It is therefore important to ensure that it is clear to all assessors what is meant by any terms applied to a specific country, portfolio or jurisdictional context, to avoid errors derived from using poorly defined language.

The 2015 evaluation of the impact of GEF investments recommended that the GEF supports countries in adapting the METT to make it more appropriate to their capacities and information needs, noting this: "*will help build country capacities in monitoring parameters that they find useful for improving biodiversity conservation management within their specific context, while still providing key information that can be compared and analysed at a global level*" (GEF, 2015).

The development of the Bhutan METT +, for example, included a fairly substantial refinement of the threat assessment and the addition of notes where specific multiple-choice questions needed more detail, along with addition of a number of extra questions (Dudley et al., 2016). The adaptation was done in two workshops with managers and staff of protected areas, staff and experts from the Ministry of Agriculture and Forests, which oversees protected areas, and was facilitated by two of the original developers of the METT (Wildlife Conservation Division and Equilibrium Research, 2015). Other versions of the METT which have been adapted with guidance for local implementation include the Carpathian Countries Protected Areas Management Effectiveness Tracking Tool (CCPAMETT), see for example the version from Poland (Pap, 2012); the Management Effectiveness Tracking Tool for Protected Areas managed by the Zambia Wildlife Authority (METTPAZ) (Mwima, 2007); South Africa (Cowan et al., 2010) and Indonesia (Kementerian Lingkungan Hidup dan Kehutanan, 2015). Further adaptations are strongly encouraged.

The first version of the METT was translated into multiple languages (at least seven and probably many more) however as there is no central repository of METT versions, reports or advice most countries have a new translation made when using the METT. Translations of METT 4 into multiple languages is a priority for further development and, as these become available, they will be stored on the website at UNEP-WCMC. Spanish and Russian version are already available and a translator's version of the Excel tool is available (please use the METT Support Group Facebook to request access).

4.2.4: REPEAT THE ASSESSMENT

> **Best practice:**
>
> 6. **The METT is designed to track progress over time. Sites/networks planning to implement the METT should thus aim to repeat the assessments every few years; ideally the METT should be an automatic part of annual planning.**

Given the central role that protected areas play in conservation strategies, assessment of their effectiveness should not be restricted to time-limited projects but rather considered to be an integral part of everyday management. The relative simplicity of the METT means that it can easily be used annually, and the results integrated into management and/or project planning. The METT was designed for repeated use to show progress and users (e.g., Heffernan et al., 2004; Knights et al., 2014) have noted that its true benefit will largely be realized when future reviews are conducted and can report on significant changes in management practices or local conditions.

From the data collected in the METT database, at least 90 countries have used the METT more than once in at least one protected area (see section 7.2). Thus, nearly half (almost 2 million km2) of the area where the METT has been implemented has seen more than one assessment. However, given the use of the METT by the GEF in large scale projects in protected areas. this is not particularly surprising.

4.2.5: CONSULT AND GET CONSENSUS

> **Best practice:**
>
> 7. **The implementation of the METT should wherever possible include a wide range of rightsholders and stakeholders to aid insight in the assessment results; including people outside the protected area, such as local communities, will bring richer insights**

Although designed to be a self-assessment tool, the intent of the METT was to involve a range of stakeholders in the assessment process. The Protected area attributes sheet in the METT includes details of who has been involved in the assessment, but in the past this section has often not been completed and therefore few of the METTs collected on the METT database include this information. The METT guidance notes state that implementation is best achieved through discussion and consensus building with protected area, project or other agency/expert staff and "where possible additional external experts, local community leaders or others with knowledge and interest in the area and its management should also be involved" (Stolton et al., 2007, page 6). However, this wide-ranging consultation process has not always been a feature of implementation and as Coad et al. (2014) note, "where funding for PAME assessments is not ring-fenced within project budgets, PAME assessments may be conducted rapidly with the minimum number of participants, reducing their robustness". As pressure increases for greater stakeholder involvement in protected areas, and in conservation more generally, it will become increasingly unacceptable to have purely expert-driven assessments.

The protected area manager/s should be actively involved in the assessment. As Cook and Hockings (2011) state: "involving protected area managers in the evaluation process demonstrates the importance of setting clear objectives, which will ultimately benefit the day-to-day management of the protected area" and by being involved in the assessment "the evaluation data are more likely to be used to improve management".

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Involving a wide range of stakeholders ensures more accurate and representative METT results. Local women from Mwanachingwala Conservation Area, Zambia.

Research has shown that protected area managers are on the whole well placed to assess key management issues accurately (Cook et al., 2014) and bias in METT responses, even when linked to large-scale funding such as that provided by the GEF, is not a major issue, particularly when assessments are a participatory process (Zimsky et al., 2010).

Carbutt and Goodman (2013) also note that the accuracy of the METT score is dependent on identifying the right staff members and rightsholders and stakeholders to be involved. The METT comprises a broad range of assessment criteria, with no single individual best placed to answer all of the questions with 100 per cent certainty. It is therefore important to encourage the participation of a variety of relevant staff members, to bring a wide range of expertise to the assessment. They stress the need for implementation planning to include practical steps such as informing staff about their requested involvement in the assessment in a timely fashion and allowing participants the time and space to debate each question to help eliminate any bias, false perceptions or prejudice inherent in such assessments.

Group discussions have been shown to result in better PAME results because they can stimulate additional recollections from other members of the group (Cook et al., 2014). In Zambia, where the METT was completed with peer review and full stakeholder participation – including protected area managers, private sector in the form of tour and lodge operations, and local communities living in the Game Management Areas (GMAs) – the scores had more buy-in and were more accurate as more discussion had taken place before a score was decided. The METT thus serves not only as a performance metric but also as a means to foster communication and participation in the management of the protected area or GMA (Zimsky et al., 2010). A review of METT use by the GEF found that higher mean METT scores were correlated with only protected area managers and staff being present, whereas scores were found to be lower by as much as 0.1 (on a scale of 0 to 1) when community members, NGOs and external experts were present (GEF, 2015). As a result of this, the GEF database on METT results now collects data on the number of people involved. Data from over 800 assessments shows that participation is becoming more usual. Although some assessments are still only completed by one person, the average number of people involved is five and one site assessment involved 70 people.

However, there still seems to be a lot of reluctance to bring in a wider group of stakeholders. The METT protected area attributes datasheet allows for the type of stakeholders to be recorded (e.g., protected area staff, local stakeholders, NGO staff etc). But, these simple check boxes have rarely been completed and it is hard to know who has been involved in implementing the METT. But from the results from the 800 or so assessments collected by the GEF it is clear that wider stakeholder participation in the METT has been rare, which must impact on the rigour of the results collected globally.

4.2.6: BUILD CAPACITY AND GUIDANCE

Best practices:

8. **Although designed as a simple tool, implementing the METT may be the first time that protected area staff and other rightsholders and stakeholders have been involved in assessing PAME. Thus, some capacity building is advisable so that all participants understand PAME.**

9. **As a generic tool the METT questions can be interpreted differently in different situations/jurisdictions. Developing a better understanding of the METT and how it can be implemented in a specific jurisdiction will help ensure valid results.**

A common criticism of self-assessment is that differences in the interpretation of the answers will create bias in the results. The multiple-choice nature of the METT was chosen as a contribution towards eliminating bias (many PAME questionnaires ask for assessments to made on the basis of, for example, low, medium or high ratings, without explanation of the rating systems). The possibility of bias is further minimized through the standardization of the possible results through capacity building of those undertaking the METT (Cook and Hockings, 2011) and training assessors in standardized interpretation of indicators (Coad et al., 2014). For example, in Bhutan where there are only 10 large protected areas across the country, two or more management staff per area were trained in workshops to understand and complete the METT and protected area staff were able to discuss draft results together and develop guidance for specific questions where needed (Dudley et al., 2016). In the Philippines, on the other hand, team members met several times to discuss and build common perception of the scores based on possible results prior to the field visits to review the METT results (Inciong et al., 2013). Similar processes were developed in Zambia (Mwima, 2007).

Another critical element in building capacity before undertaking an assessment is to ensure a complete understanding of the WCPA Framework (Hockings et al., 2006). For each of the multiple-choice questions in the METT the element (or in some cases elements) of the framework are provided. This helps in understanding the focus of the question (i.e., whether the question is about inputs or outputs, context or outcomes, etc). One review (Zimsky et al., 2010) noted that the classification used to categorize the questions (inputs, process, etc.) was not useful and did not contribute or add value to the process of completing a METT. However, our own experience suggests that when training participants in using the METT, dividing the questions into the elements of the WCPA Framework not only helps with the understanding of the METT questions but ensures the WCPA Framework is better explained.

Specific capacity building material may also be useful, such as provision of PowerPoint slides for each question, which can be projected and filled in collaboratively if several different stakeholders are involved.

Meetings with park staff and local community representatives during a verification field visit to Jigme Singye Wangchuck National Park, Tingtibi Range Office as part of the Bhutan METT + implementation

4.2.7: VERIFY RESULTS

Best practice:

10.Although designed as a self-assessment tool, METT implementation can involve verification processes; ranging from simple checking of completed METTs to more detailed field verification exercises.

As noted above, repeat assessments are intended to show change in management over time. However, reporting change may also be influenced by the desire of staff to show that their sites and management have improved; this may particularly be the case when METT results are linked to funding – as is the case with the GEF. One of the main criticisms of the METT is that it relies on purely subjective responses to questions by the management agency and partners, with no field verification (e.g., Johns, 2012) and scoring system can be subject to one-sided opinions and perspectives in the absence of peer review, thereby introducing subjectivity and bias (e.g., Carbutt and Goodman, 2013). As noted above, capacity building projects might be tempted to score themselves low to start with and progressively higher over time: such manipulation does sometimes occur. Employing external experts to participate in the evaluation is increasingly being used, and recommended, in a range of PAME processes (Cook and Hockings, 2011). Some independent auditing can therefore be valuable when implementing METT projects. There are many different options for verifying METT results, including:

• **Verification as part of the assessment process:** The implementation plan for the METT can include a process to develop, elaborate, clarify and/or present the METT assessment findings, using interviews and discussions groups to discuss the results. Such processes were noted in implementations in the Philippines (Guiang and Braganza, 2014) and Zambia (Zimsky et al., 2010).

• **Desk study verification:** Either getting experts who are familiar with the site to peer review the results or undertaking a short desk study to validate the assessment results, can be a relatively quick and cheap verification process. The 2007 analysis by WWF included the use of the METT in repeat assessments where management improvements were recorded. Detailed comparison of two assessments from an individual site in Cameroon was carried out through a short desktop study and development of a case study. The study demonstrated a richer picture of the changing status and effectiveness at the site (Boumba Bek and Nki protected area) following management interventions and support (Dudley et al., 2007).

- **Field study verification:** In Bhutan, field visits were carried out prior to finalising results, involving a selection of sites which had completed the METT (Wildlife Conservation Division and Equilibrium Research, 2016). The visits included an opportunity to talk to protected area managers, staff and community leaders and visit offices and staff outpost, which provided useful insights and context into the management of the site.

- **Detailed verification process:** Although not used in the METT assessment, verification processes that provide thorough checks of protected areas data are being developed for the Conservation Assured and Green List processes (see section 5.3).

4.2.8: IMPLEMENT RECOMENDATIONS

Best practices:

11. **Completing the METT is only the first step of the assessment; the implementation process should include adaptive management (e.g., a plan of action to implement results) and communications process to share results.**

12. **Share METT data nationally and ideally globally.**

The METT is not an academic exercise but rather an aid to good planning and management. The METT score should therefore not be seen as a "pass" or "fail" but as an indication of the level of effective management. Many METT studies (see section 7.2) report on the assessment in terms of the six elements of the WCPA Framework as recommended in the METT (e.g., see Inciong et al., 2013; Mwima, 2007, etc), helping highlight specific areas of management weakness, and thus providing a better indicator of effectiveness than an overall score. However, very few to date have included specific action plans, let alone a timeline of action, responsibility, budget etc, which will ensure the action plan is implemented. The most likely reason for this is that the next steps section of the METT has not be adequately filled in (see 3.2.2.), which in METT 4 should no longer be the case. One effective use of the score, applied in some countries (e.g., Indonesia), is to translate scores in actionable outputs, i.e., identify activities to improve low scoring questions and set targets for improvement.

Communicating the results of the METT is also important – to all those involved as well as to protected area management authorities, funders etc. Section 7.2 details several reports and papers about implementation of the METT. Many are project reports and analyses and most have remained in the grey literature, although METT results have been included in peer-reviewed studies of global data sets. Communication is important for those who have been involved in the assessment, so they can see if and how results have been used; to managers of protected areas so they can react to the proposals and more generally to politicians and civil society, to show how protected areas are performing.

The results should also be shared nationally or globally, for example by submitting METT data to the Global Database on Protected Area Management Effectiveness[8] (GD-PAME) managed by UNEP-WCMC, which is mandated by the CBD to maintain the GD-PAME and use it for CBD reporting (see section 3.4).

Case study 2

Bhutan METT+

Authors: Sue Stolton, Nigel Dudley, Sonam Wangchuk, Dechen Lham and Shubash Lohani

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Jigme Dorji National Park, Bhutan.

Bhutan is a land-locked, mountainous country with a small population and a strong commitment to sustainable development. It has set aside over half the country into protected areas, mainly but not exclusively in the high mountain areas. Bhutan has rich wildlife, including viable populations of tigers and many endemic species.

The METT was applied to all ten protected areas in Bhutan and the Royal Botanic Park, as a key stage in developing a *State of the Parks* report for the country and as part of an awareness raising programme on the Conservation Assured | Tiger Standards (CA|TS, see section 5.2) (Lham et al, 2019). While the METT was used as the core of the assessment, considerable modifications were made in association with the Bhutan government and protected area managers and staff. The **Bhutan Management Effectiveness Tracking Tool Plus** (**Bhutan METT +**) was developed at training workshops organized by the Bhutan Wildlife Conservation Department (WCD), in Lobesa, Punakha in 2015 and at the Royal Botanic Park Lamperi in 2016. Representatives from the WCD, 10 protected areas and the Royal Botanic Park and core team of the Department of Forest and Parks Services worked with Equilibrium Research to develop the recommendations that led to the design of the Bhutan METT + in 2016 (Wildlife Conservation Division and Equilibrium Research, 2015). The basic structure of the METT was not changed, to allow the results to feed into the global database. Adaptations took four forms:

1. Adaptation of the threats assessment to allow for current and potential threats and issues (which could become threats if not effectively managed) to be identified.

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Developing and implementing the Bhutan METT +

2. New tools added to the METT to provide a more detailed assessment of: (i) threats, looking at spatial and temporal issues of threats considered as medium or high; (ii) an assessment sheet on the national context looking at the extent to which current policy supported protected area management; and (iii) outcomes. Baseline data will be collated to develop a set of headline indicators for monitoring biodiversity in Bhutan; once these are agreed work will start on developing detailed indicators and monitoring systems and protocols for the headline indicators.

3. Guidance notes on the interpretation of the METT in Bhutan, particularly with respect to the threat assessment and some of the multiple choice questions.

4. Additional questions relating to e.g., climate change and transboundary influences along with some modifications to existing METT questions and to the background data sheet.

A "Rosetta Stone" version of the Bhutan METT + was produced which explains the changes and additions to the METT. This version was edited and revised to produce a final version of the Bhutan METT+ 2016.

The METT was filled in for five sites in a workshop in 2015; and for all the sites in 2016 when field verification also took place for three of the protected areas, including interviews with local stakeholders conducted by external specialists. Data from the METTs has been reviewed by WCD and external specialists and collated and analysed to show relative strengths and weaknesses and to identify important next steps for both individual protected areas and for the national protected area system as a whole. The *State of the Parks* report was published in late 2016 (Ministry of Agriculture and Forests, 2016) and has been used to set a baseline for "Bhutan for Life", a major funding programme for protected areas in the country.

5. METT QUESTION-BY-QUESTION GUIDANCE

The METT was designed to be a simple tool that could be picked up and used with minimal training. However, experience has shown this may be over-optimistic, and that most users need some help to get the best possible results. Various training courses have been developed around using the METT. The section below reviews each part of the METT and, drawing on the experience of using and training users, provides more detailed guidance, with particular emphasis on the multiple-choice questions.

Photo: Implementing the METT in Indonesia

5.1. INTRODUCING METT 4

The fourth version of the Management Effectiveness Tracking Tool (METT 4) has been revised following discussions around the need to develop some new questions, raised in the first edition of the *METT Handbook*, feedback from a number of site applications, and the opportunity to build on an Excel version developed by KfW, the German state development bank. The guidance sections below are therefore designed to be used with the new Excel version of METT 4; and section 4.6 specifically deals with data management issues when using the METT. However, as most of the questions remain from earlier versions of the METT, the guidance should also be useful to anyone using older or adapted versions of the METT in terms of understanding the focus and intent of specific questions.

The METT was originally designed and is mainly used in the assessment of protected areas as recognised by IUCN and the Convention on Biological Diversity, although it has also been adapted for use in other sites, such as community forests. In recent years, the concept of "other effective area-based conservation measures"[9] (OECMs) has been recognised; sites outside formal protected area networks where management nevertheless, by accident or design, helps to maintain biodiversity effectively (IUCN-WCPA Task Force on OECMs. 2019). The METT could easily be adapted for use in OECMs. As in the case of protected areas, the UNEP World Conservation Monitoring Centre has begun to develop a database[10] on OECMs.

This chapter provides additional guidance for completing METT 4. It takes each of the main "sheets" in the Excel format in turn and describes how to complete each element in more detail.

5.2. GETTING STARTED

Please follow these instructions carefully otherwise you will not be able to use the METT 4 properly.

1. Open the file <METT4MasterFile.xlsm>*

2. Depending on the setup of your machine please note:
   - If the file opens in "Protected View" you need to "Enable Editing" when prompted by the "Security Warning".
   - If a second "Security Warning" appears saying that macros have been disabled, you will also need to "Enable Macros" before continuing.

3. Fill in the details on the "About" page with the following details:
   - Country (e.g., Australia)
   - Site name and year as one word (e.g., Lamington2020)
   - Username (e.g., Hockings)

4. Immediately "Save" the workbook in order to keep the Masterfile as a blank workbook for future use. You do this by clicking on the orange button labelled "SAVE" at the top right. This will bring up a save file dialogue box with the text from the Site name and year field as the file name. Close the Master file without saving it and then open the newly saved site Excel sheet, again enabling Macros as necessary. You can then go to the METT 4 Introduction using the navigation button on the right of the sheet if you wish to read the general guidance on completing the METT or proceed straight to the Protected area attributes sheet, again using the navigation buttons.

The file name will also include the most up-to-date version of the file, e.g., METT4MasterFile V4-1

5.3. THE METT DASHBOARD

The second worksheet is a Dashboard that presents a summary of the assessment as it is completed. No data is entered directly into this worksheet as it will be completed automatically from the responses entered when the METT 4 is completed. It can be printed at the end of the assessment to present an overview of the results.

The dashboard contains nine elements (see figure 1). The first three present data from the multiple-choice questions 1-38 organised by the IUCN-WCPA Management Effectiveness Evaluation elements. The spiderweb chart (1) and bar chart (2) show the percentage of maximum scores in orange and your percentage scores in blue. The table (3) shows how the various individual METT 4 scores contribute to five of the six elements of management effectiveness identified in the assessment framework from the IUCN World Commission on Protected Areas: *planning, process, inputs, outputs and outcomes*. This summary may help to see if there are consistent strengths and weaknesses in management and where greater attention is needed in the future. Note that the sixth element of the IUCN Management Effectiveness Framework (*context*) is not assessed through the 38 questions in the METT 4 but is addressed in the sections of the METT 4 on attributes and threats.
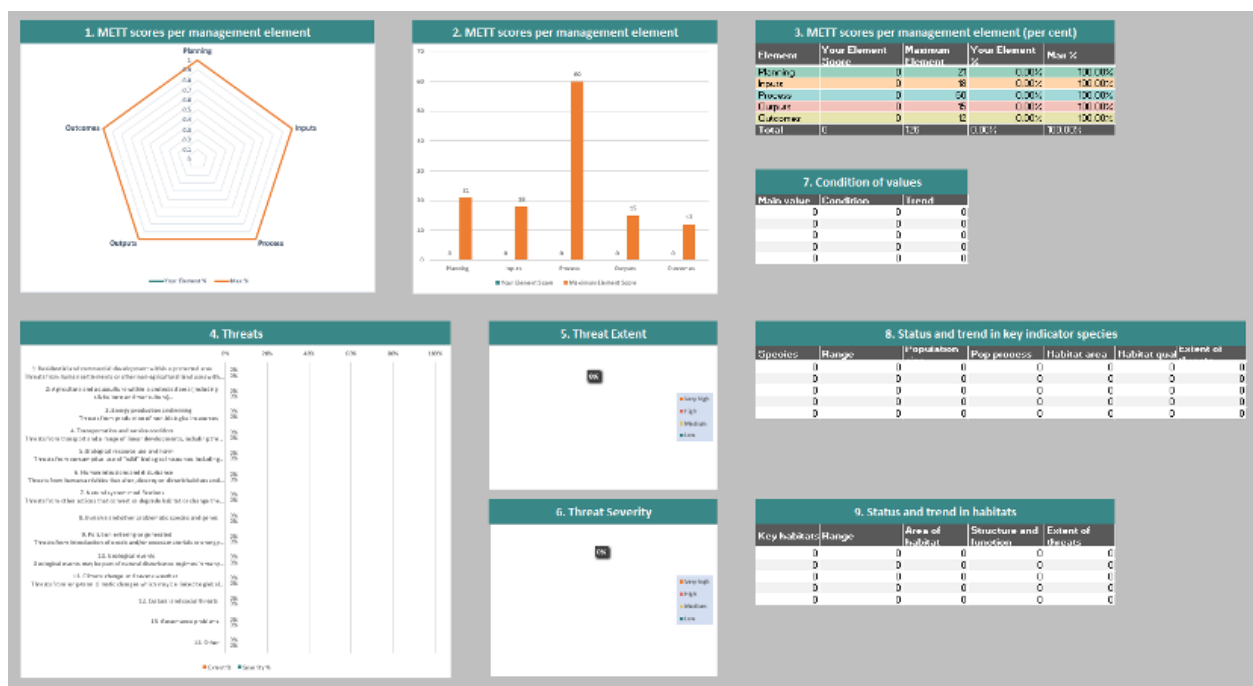
Figure 1: The nine figures on the METT Dashboard

The Dashboard also presents summary information on threats (elements 4,5,6) and on more detailed Outcomes information on condition of values and status and trend of species and habitats (elements 7,8,9).

Element 4 graphs the extent and severity of threats that have been identified relative to the maximum possible score for each category of threat. Element 5 shows the overall distribution of threat extent across all categories of threat recorded. It will indicate whether threats are mostly very localised (low) or whether they tend to be widespread (very high) across the site. Similarly, Element 6 shows the distribution of threat severity, indicating how many of the threats present in the site fall into each category of severity (low to very high).

Element 7 of the dashboard shows the condition and trend assessed for each of the five main values identified in the protected area attributes page as assessed in the worksheet "Detailed assess. of values". Element 8 summaries the data from the worksheet "Detailed assessment of species" and Element 9 does the same for "Detailed assessment of habitat".

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Understanding the full impact of threats to protected areas is an important part of the METT. The assessment includes threats both inside protected areas and threats, such as dams, which are outside the boundaries but can have major impacts on hydrology in a protected area.
Hydro-electric dam under construction in Honduras.

5.4 BACKGROUND INFORMATION ON PROTECTED AREA ATTRIBUTES

The first sheet (sheet 4 on the Excel file) which needs completing is "*Protected area attributes*"; a worksheet that compiles basic data about name of the protected area, size, any formal designations, etc, but also baseline information vital for the remaining assessment including values, main ecosystem services and management objectives. Some parts are self-explanatory and are thus not discussed further below; for others we give explanatory background wherever necessary. The format of this page is laid out at the top. There is a list of questions, room for an answer (which sometimes is a tick box or drop-down list), space for any notes to help clarify the answer and a "notes" column, which includes a shortened version of the guidance given below. Assessors should work down the list of questions and click on the "your answers" box to complete the worksheet.

Several of the questions include drop-down lists of answers. To access drop-down lists where these occur, click on column B and open using the downward arrow that will appear on the right.

Country: in some cases (transboundary protected areas) there may be more than one country to list

Location of protected area: add details of the area in which the protected is sited, e.g., province, state, county etc and, if possible, map reference. Note, the METT is designed to assess entire protected areas. If the protected area is zoned and management is particularly different for each zone, separate METTs could be completed for the different zones.

Year of assessment: add here the year (e.g., 2021) for which you are carrying out the assessment.

Name of protected area: this should be the full name; and should be the same as the name included on any official list (from the government, World Database of Protected Areas[11], etc). If the site is known by more than one name, or if the name has changed recently, include alternatives, stressing which one is now the "official" name.

WDPA Site Code: each protected area has a unique identifier code, which is listed on the <u>World Database of Protected Areas</u> (WDPA) (e.g. <u>https://www.protectedplanet.net/2013</u> is the site code for Yellowstone National Park in the United States). To find this, type the name of the protected area into the search function on the WDPA, open the record for the site and the WDPA ID is listed on the top left of the page.

<div style="background:#f9d9e4;padding:1em;">

Box 2: WDPA errors
Collecting data on the entire global protected area system is challenging and nothing is ever perfect. If you think there are mistakes on the WDPA relating to your protected area, please contact **protectedareas@unep-wcmc.org**

</div>

Year of establishment: the year of establishment should be available in the <u>WDPA</u>[12] record. For state protected areas, usually the date of legal establishment should be provided. However, sometimes state-run protected areas operate for years before the legal process of establishment is completed. In this case the date when the protected area was agreed by the government should be listed. For sites where designation has changed over time (e.g., if a nature reserve has been changed to a national park) list both dates if possible: first establishment of the protected area and then the later change in national designation. For privately protected areas or community conserved areas, usually the date of purchase or the date when an area of land or water was announced or agreed as a protected area is considered the date of establishment. Along with the data, note what the date refers to (e.g., legal establishment, government announcement, self-declaration by community, etc).

National designations: this refers to the national category given to the protected area – such as *national park, wilderness reserve, nature reserve,* etc. Listing this is important because in most countries each designation will have their own policies, rules and sometimes legislation, which will influence management and is important for interpreting the METT results.

IUCN protected area category: most, but by no means all, protected areas are also identified by the national government as falling into one of the six IUCN management categories. This is important, because the way that individual countries define something like a "national park" might be very different in terms of the way that it is managed: the IUCN category provides an international standard. IUCN categories are usually listed nationally and on the site record of the <u>WDPA</u>. For more information see the *Guidelines for Applying Protected Area Management Categories*[13] (Dudley, 2008). In the METT, the Excel sheet has a drop-down menu listing all the IUCN categories. Select the appropriate category from this drop-down list – do not type the category name directly into the answer field. If you inadvertently type directly into the field, you will get an error message – select "Cancel" (rather than Retry) and then use the drop-down list. If more than one IUCN category is applied to parts of the protected area (although not common, this can be the case in very large protected areas), list just the *main* category here and list all applicable categories in the next cell ("IUCN PA Category (Other) – list category numbers that apply"). This will be quite a rare situation; protected areas only include multiple categories in a minority of cases and where these are defined in law.

International designations: the METT includes a list of international designations which may also apply to the site being assessed. Three are important and discussed below, each needs to be reviewed and a drop-down box is used to indicate if the site is listed under each designation and for World Heritage sites the criteria under which the site is listed.

• **World Heritage:** There are hundreds of natural or mixed natural and cultural World Heritage sites around the world and most of these are protected areas. The information needed to fill in this section should be on the <u>UNESCO World Heritage list</u>,[14] which is in alphabetical order by country. Each site entry includes key information on the date listed (the date when the World Heritage Committee

recognised the site as belonging to the World Heritage List), the name (which may be different from the name generally used in the country) and the area. The site entry also includes the criterion or criteria (i to x) for which the site was listed, which can be identified by the relevant number(s) in the METT 4 Excel sheet, after noting if the site is World Heritage listed or not. You can select multiple criteria by choosing each one in turn and then opening the drop-down list again. Ideally add the link to the site entry on the World Heritage website in the "notes" field (e.g., https://whc.unesco.org/en/list/682 links to Bwindi Impenetrable National Park in Uganda).

- **Ramsar:** A key commitment of the Convention on Wetlands' Contracting Parties is to identify and place suitable freshwater and coastal wetlands onto the List of Wetlands of International Importance, also known as the Ramsar List. There are over 2,400 Ramsar sites. To find out if a site is listed, see the map, list and associated information on the Ramsar Sites Information Service.[15] Ideally add the link to the site entry on the Ramsar website in the "notes" field (e.g., https://rsis.ramsar.org/ris/1202 links to Humedales Del Sur de Isabela in Ecuador).

- **Man and the Biosphere:** Information on UNESCO Man and the Biosphere (MAB) reserves can be found in the Directory of the World Network of Biosphere Reserves (WNBR),[16] which gives basic data on establishment and size. Note that MAB designations cover three zones: core, buffer and transition, and countries vary about whether or not they list all three zones as "protected areas": many only list the core zone so in these cases the protected area may be part of the MAB reserve. Ideally add the link to the site entry on the WNBR website in the "notes" field (e.g., http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/asia-and-the-pacific/australia/kosciuszko/ links to Kosciuszko National Park in Australia).

- **Other designation:** There are a number of other, usually regional, designations such as the Association of South East Asian Nations (ASEAN) Heritage sites[17] and Specially Protected Areas and Wildlife (SPAW)[18] in the Wider Caribbean Region. These other designations can be typed into the worksheet.

Has the site been identified as a site of particular importance for biodiversity?: A list of the five common designations for sites of biodiversity importance can be selected from the drop-down list. Multiple systems can be chosen by clicking each relevant designation in turn, by going back to the drop-down list.

1. **Key Biodiversity Area** (KBA)[19] are sites contributing significantly to the global persistence of biodiversity, in terrestrial, freshwater and marine ecosystems. The Global Standard for the Identification of Key Biodiversity Areas sets out globally agreed criteria for the identification of KBAs worldwide (IUCN, 2016).

2. **Important Bird and Biodiversity Area** (IBA)[20] are places of international significance for the conservation of birds and other biodiversity. The identification of Important Bird and Biodiversity Areas (IBAs, called Important Bird Areas until 2013) follows criteria[21] set out by BirdLife International.

3. **Alliance for Zero Extinction site** (AZE)[22] identifies the most important sites for preventing global extinctions, i.e., those that have threatened species restricted to just a single site in the world. There are three criteria,[23] which sites need to meet in order to listed.

4. **Ecologically or Biologically Significant Marine Areas** (EBSA) support the healthy functioning of oceans and the many services that they provide. The process has been led by the Convention on Biological Diversity (CBD) which has developed criteria[24] to identify EBSAs.

5. **Important Plant Areas (IPA)**[25] are globally significant sites for wild plants and threatened habitats. Managed by Plantlife International, three criteria[26] form the basis for the listing process.

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The relationship between research and protected area management is vital, so it is important to document research activities when completing the METT.
Leatherback turtle nest count in Panama

As with the International designations above, it is helpful to add, where relevant, the URL to the specific site information sheet in the "notes" field (e.g. http://www. keybiodiversityareas.org/site/factsheet/9502 links to the KBA at Lille Middelgrund, Denmark, or http://datazone.birdlife.org/userfiles/file/IBAs/CaribCntryPDFs/bonaire. pdf links to Bonaire in the Dutch Caribbean).

Governance details: Four main options for governance of the site are given in the drop-down boxes (state, private, Indigenous people and local communities, co-management), which reflect the four governance types identified by IUCN; for more information see the *Guidelines for Applying Protected Area Management Categories* (Dudley, 2008). If none of these matches, an "other" option is given. The "notes" field should be used to provide more details and clarification.

Management authority: Name the body responsible for management of the site. This could be a government department, NGO, community, commercial company, etc.

Size of protected area (in km²): Enter this value directly, converting hectares or other measures to km². Note that this can also be found on the site record of the WDPA (see box 2 on what to do if the record is wrong).

Number of staff: First indicate whether the site has staff or not (yes/no). If there are staff, record the number of permanent and temporary staff (in numbers only) who usually work in the site over a year. The "notes" field can be used to provide more detail, for example, if staffing has been calculated into terms of FTEs (Full Time Equivalents). Do not forget to include all staff, including those working on administration or staff shared with other sites.

Available budget: Provide the total available annual budget for the area in local currency and name the currency in the next field. If the period being reported is *different* from the year of assessment note the year being reported in the "notes" fields. Ideally, also break budget information down into recurrent (operational) funds and project or other supplementary funds, providing these on an annual basis in the same currency as available budget.

Annual visitor numbers: If possible, give the exact number of visitors annually, where this not known give an estimate. Please give the period being reported in the "notes" field if different from the year of assessment.

What are the main values for which the protected area is designated?: Major values might consist of either natural, cultural, social or economic attributes of the area. The METT 4 provides space for the five main values to be listed. Answers should be focused and quite short. Additional information can be provided in the "notes" field. Values may sometimes be written down formally (for instance in application for World Heritage status or in the protected area management plan), or they may be implicit. **Values can be identified at a level of specificity that makes sense in terms of the management of the protected area**. A value could for instance be a particular ecological community or a particular species of special importance. *Sites may have a wide range of social, cultural and/or economic values but they would generally be expected to have at least some natural values.* If detailed values have not been identified a generic list of value types is provided below, and in the METT 4 Excel sheet (click on the "*additional guidance*" link to take you to the final Excel sheet on the METT 4, containing detailed guidance, which can help guide response).

The values that assessors list here are also used to assess impacts of threats, so it is worth spending some time really thinking about the values and their management.

Natural Values: Major natural values should include nature or biodiversity values (e.g., threatened species, priority habitats or ecosystems) and should also consider:

- Ecological processes
- Landscape and connectivity values
- Geological and geomorphological features
- Paleontological values
- Scenic values and outstanding natural beauty

Social Values: Major social values may include:

- Recreational use
- Social significance to local, regional or national communities
- Historic sites and structures

Cultural Values: Major cultural values may include:

- Significance to Indigenous peoples
- Sites and artefacts of Indigenous importance
- Sites with importance to faith groups and religions
- Historical or archaeological importance
- Access to resources of cultural importance (e.g., medicinal plants and traditionally harvested resources)

Economic Values: Major economic values may include income that is important at the local, regional or national level from:

- Tourism or recreational use of the area
- Sustainable use of resources
- Payments for ecosystem services

When completing the METT questions on local and indigenous people it is important to include local people in the assessment process.
Fishing community in Amazonas State, Brazil.

What are the main ecosystem services delivered by the protected area?:
Sites are increasingly being recognised for, and sometimes managed in part for, their ability to supply ecosystem services additional to biodiversity conservation; including contributions to food and water security, disaster preparedness and a range of recreational, cultural and spiritual values. Some of these will be useful mainly to people living in or around the protected area, other ecosystem services will benefit people living further away, or provide general benefits at national or even global scale. An understanding of the main benefits is important in building an effective management plan; some will also be a potential source of income. Note: some of these ecosystem services may already have been identified as values in answer to the previous question. Sites are asked to identify up to three major ecosystem services from a drop-down list of 11 services. More details can be provided in the "notes" field.

1. Wild food (fish, herbs, honey, game...)

2. Traditional agriculture and aquaculture (farming, livestock grazing)

3. Agriculture support (pollination, pest predators)

4. Water security (quality, also sometimes quantity)

5. Timber and non-timber forest products

6. Health benefits (medicines, exercise, mental well-being)

7. Climate mitigation (carbon sequestration and storage)

8. Disaster risk reduction

9. Cultural, spiritual and aesthetic benefits

10. Recreation and tourism

11. Education and research

List the two most important protected area management objectives: These should be in the management plan, but there will often be more than two. In this case, or if objectives have not been formally written down, people compiling the METT should agree on the two most important management objectives. **At least one of these should have a *conservation focus*** rather than, for instance, tourism management or supply of ecosystem services. Identifying the management objectives of the site being assessed is important as the assessment of management in the rest of the METT assessment should be made against these objectives.

Number of people involved in completing assessment: It is important that the assessment should not be carried out by one or two people in isolation but that it should be a discussion between various rightsholders and stakeholders. This section records both the total number of people and then includes a breakdown of who was involved. The first row automatically sums the numbers of people from different sectors (e.g., protected area manager, protected area staff NGOs from the rows below).

Was the METT assessment carried out in association with a particular project, or on behalf of an organisation or donor?: Record here why the METT is being carried out; for example as a condition of getting a GEF grant, or because it is standard government policy, or a personal interest of the manager, etc. When the data in the "protected area attributes" worksheet has been completed, use the orange navigation button at the top right of the worksheet to move to "threat assessment" sheet.

5.5. DETAILED ASSESSMENT OF THREATS

The threat assessment is based around an adapted <u>typology of threats</u>[27] developed by the Conservation Measures Partnership (CMP) and IUCN as part of the <u>Open Standards for the Practice of Conservation</u>.[28] In this context, threats are the human activities or processes that have caused, are causing, or may cause the destruction, degradation, and/or impairment of biodiversity targets (e.g., unsustainable fishing or logging). Threats can be past (historical), ongoing, and/or likely to occur in the future.

The threat assessment provided in the METT 4 is the most detailed assessment included in the METT, a simpler version is provided in the 2007 METT. However, for many threats, even more detailed assessments may be needed. For example, the METT 4 assessment has an overall assessment for recreation activities and tourism impacts, but for some areas there may be multiple and quite different threats under this one heading. In a marine protected area, for example, recreational threats might include trampling of seagrass beds, which is a local impact, and divers threatening coral reefs, which might be more widespread. For the METT 4 assessment, all threats from a particular activity need to be considered and an overall assessment made; however, the threat assessment template provided in the METT 4 can easily be adapted to carry out more detailed threat assessments for specific threats facing a particular protected area, if this is required.

- **Column A and B:** In the METT 4 Excel sheet: the CMP threat classification is provided in the first two columns; the second column giving the more detailed description, which provides the starting point for the assessment.

- **Column C:** A short description of the threat should be given here. It is important to define the period of time being assessed here, e.g., is the threat ongoing or imminent (e.g., within 5 years).

- **Column D:** The more detailed threat assessment which follows should only be made for threats which impact the main values of the protected area. A drop-down box in this column will bring up the values identified in the protected area attributes. If more than one value is impacted by a threat, you can select multiple values by selecting each in turn, by going back to the drop-down list to select additional values. Select these in order, from most impacted to least impacted.

- **Column E: threat extent.** This assessment is made using a drop-down list which assesses the extent of the threat (i.e., how much of the protected area is affected) rated as *very high, high, medium* and *low*, ranging from a widespread threat affecting the value throughout the site to very localised threats in only limited locations. If the METT is being used as a long-term assessment tool it may be useful to develop further guidance for the individual protected area, or protected area network, on how to interpret these classifications, as threat levels vary around the

world. Column I (see below) also includes a "notes" section where more information can be provided on the reasons behind this assessment choice.

- **Column F: threat severity.** This assessment is also made using a drop-down list with four categories from *very high* to *low*. Again, developing specific site/system level guidance is recommended here if the METT is being used regularly. Column I (see below) also includes a "notes" sections where more information can be provided on the reasons behind this assessment choice.

- **Column G: source of information.** It is useful to add details on the information base used to make the threat assessment, both to help in acting on the results of the METT and for reference for those using the METT for future assessments.

- **Column H: management response.** *This is the most important column*; not only does it detail responses to specific threats, but it should also be noted when carrying out repeat assessments to see what actions were planned, to check if these took place and if they had an impact in mitigating the threat. Please ensure these responses are reflected in Question 33.

- **Column I: notes.** Any notes regarding the assessment can be added here, relating to the threat extent or severity or additional information regarding the threat.

It is important when completing the assessment to note that the first two threat categories are on the impacts of activities happening *within* the protected area, the rest of the assessment looks at impacts from within and beyond the area's boundaries, which can in some cases include activities beyond state and country borders.

The threat assessment categories should be easy to understand and any notes about the specific form of the threat in the site/system being assessed can be made in column C. It should be noted that:

- Threat 2 (agriculture and aquaculture): the focus is on illegal drug cultivation, the collection of species from the wild is covered in threat 5.
- Threat 3 (energy production and mining): energy generation looks specifically at threats from hydropower dams *within* protected areas. Hydropower developments outside protected areas can also threaten management effectiveness and the impact of such threats is covered in threat 7.

This assessment is linked to question 33 in the multiple-choice section of the METT, which assesses how threats to the main values are being addressed by management.

Box 3: SMART Monitoring

The Spatial Monitoring and Reporting Tool (SMART) is designed to improve anti-poaching efforts and overall law enforcement effectiveness in protected and conserved areas and similar where there is active ranger patrolling. SMART enables the collection, storage, communication, and evaluation of data on: patrol efforts (e.g., time spent on patrols, areas visited, distances covered), patrol results (e.g., snares removed, arrests made), threat levels, and other enforcement activities. It also helps in recording information on important wild species. The "SMART Approach" combines a site-based management tool with capacity building and a set of protection standards. When effectively employed to create and sustain information flow between ranger teams, analysts, and conservation managers, the SMART Approach can help to substantially improve protection of wildlife and their habitats. SMART is already used in over 900 sites in almost 70 countries. People involved in SMART and METT are working together to maximise the synergies between these tools. SMART data, where available, will be a key input to threat assessments carried out for the METT. See chapter 6 below for further details.

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Managing for the impacts if climate change has become a far more urgent task for protected area managers over the last few years. For example, almost all of the 47 large glaciers in Patagonia's Los Glaciares National Park have retreated over the past 50 years.

5.6. METT 4 QUESTIONS & SCORES

This sheet lists all the multiple-choice questions in the METT 4. When you click on a question, you will be taken directly to the sheet that contains the respective question. At the top of each sheet there is a "Back to METT 4 questions + scores" link. When clicking on this, you will be taken back to this overview page.

The column "Your METT score" will be automatically filled in as you go through the METT questions and score them. If some questions are not relevant to your protected area, tick the box, which is found at the top of each METT question worksheet. The maximum METT score will be automatically adjusted if particular questions are not relevant. However, please note down on the respective sheets why questions are not relevant, so later assessors can understand the reason they were not answered.

Where available, add any METT scores from a previous assessment to the column "Your METT score from last assessment". This way, you can more easily identify potential trends or inconsistencies in scoring and see if management is becoming more or less effective over time.

5.7. EXPLANATORY NOTES FOR EACH OF THE METT MULTIPLE-CHOICE QUESTIONS

The following notes provide specific guidance on the individual multiple-choice questions, which make up the main assessment element of the METT 4, and where necessary further sources of information are given. Each question has a separate Excel sheet. The questions are addressed in the order they appear on the Excel.

Each Excel sheet is laid out in the same format, which is explained below.

- For each question, assessors are first asked if the question is relevant, or for questions 37 and 38 if the knowledge exists to answer the question. Most questions should be relevant and completed; but in a few cases (for instance if no Indigenous peoples are associated with the site) the question should be marked as not relevant and the assessors should move onto the next (click the button indicated). If a question is marked as not relevant, please complete the narrative box below it to provide **an explanation as to why the question was not answered** (note that you will not be able to proceed without providing this justification if you select this option). It is worth reading the whole question and all the answers before deciding if the question is not relevant as the METT tries to be as comprehensive as possible of protected area issues and status around the world. The questions should thus not be marked as not relevant because a specific action or input to management is not in place (e.g., if there is no management plan) as these situations should be included within the assessment, and options in the multiple-choice questions are provided for such cases. If questions are marked as not relevant the overall maximum score will be adjusted accordingly.

- Each Excel sheet identifies the topic being assessed on the top line; gives the question, an edited version of the guidance provided here, and then four possible answers. The first step is to make the appropriate assessment of management by clicking on the button to identify which answer matches your situation most closely from the four options provided. The METT has been developed for all types of protected areas (e.g., all governance and management types, all biomes, all sizes etc); inevitably a global tool may not always exactly match the actual situation in a protected area. The next narrative section "*Evidence and justification*" can be used to explain why an answer has been chosen and specific issues which were felt not to fully match the protected area's situation. The answers are automatically converted to a corresponding score from 0-3 for calculating overall management effectiveness results in the METT 4 questions and scores sheet.

- Once a response to the question has been selected, assessors should go to the "Evidence and justification" line of the Excel sheet. Here a narrative explanation can be provided on the reasons for choosing the particular answer. Notes may also be needed on why a specific answer has been selected if the situation described in the options does not totally fit the realities of the protected area. This is a very important element of the METT because it provides a record of the thinking behind the assessment and helps make the tool useful for management, to provide a baseline for subsequent assessments, and to help people who may be filling in the METT in the future. You must provide a response in this field.

- A further narrative section "Actions to improve management" should detail next steps and be used to outline adaptive management actions if the response to the assessment reveals management weaknesses. This field is mandatory, so add "no actions required" if management is satisfactory. Actions should consider what would be needed to improve management to reach the levels outlined in the multiple-choice answers and thus for improving the overall METT score. This is often the most important part of the assessment because when the METT
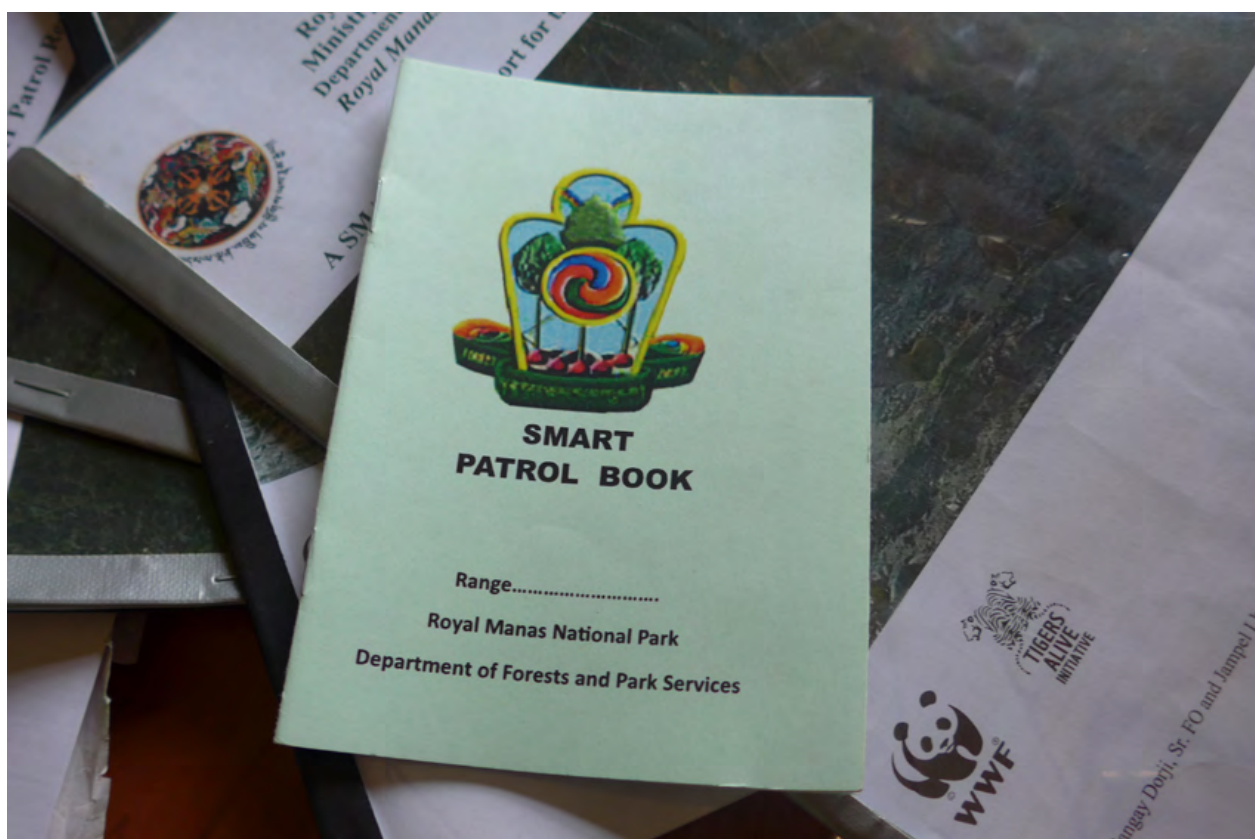
SMART patrol data can be a useful information source for completing the METT

has been completed you will be left with a list of management objectives that can (i) form the basis of future planning and (ii) be the first things to check in future assessments. The answers provided in this section are then prefilled in the final Excel sheet "actions to improve management" which is used to develop a full action plan to implement any necessary management changes as a result of the METT assessment (see section 4.5).

• The final piece of information that can be completed when filling in METT 4 is to provide more details about the information sources assessors used to help inform them about which answer/score to give for each question. Information sources are broken down into six categories (research and monitoring; planning documents and departmental data; staff experience; external expert opinion; community opinion/ traditional knowledge and other). As noted above, SMART patrol data is ideally suited to helping complete the METT and recommendations for development of SMART patrolling might be one possible management action. This information is relevant as it helps identify where good evidence is available, e.g., research and monitoring where applicable; and where it is not. It also provides any external reviewer, managers who have not completed the assessment, and those carrying out repeat assessments with vital information on the sources and knowledge base used in the assessment. Finally, it also encourages the use of community opinion/ traditional knowledge in the assessment.

METT 4 has 38 questions; eight more than the original METT as some questions have been broken down into two to make responding to them easier, and new questions have been added on issues like climate change. The order of the questions has also been revised in METT 4 to make the flow easier to follow and understand. **Because some users may be using older versions of the METT, we give the number used in the last version (METT 3)** in [square brackets] and table 2 below provides a cross-reference between METT 3 and METT 4.

Table 2: METT 3 and 4 compared

Mett 3	Mett 4
1. Legal status	1. Legal status
2. Protected area regulations	3. Protected area regulations/controls
3. Law enforcement	16. Law enforcement
4. Protected area objectives	2. Protected area objectives
5. Protected area design	5. Protected area design
6. Protected area boundary demarcation	6. Protected area boundary demarcation
7. Management plan	7. Management planning
8. Regular work plan	8. Regular work plan
9. Resource inventory	9. Resource inventory
10. Protection systems	17. Protection systems
11. Research	19. Research
12. Resource management	21. Resource management
13. Staff numbers	10. Staff numbers
14. Staff training	11. Knowledge and skills
15. Current budget	12. Current budget
16. Security of budget	13. Security of budget
17. Management of budget	14. Management of budget
18. Equipment	15. Equipment and facilities
19. Maintenance of equipment	(merged into 15)
20. Education and awareness	25. Education and awareness
21. Planning for land and water use	4. Planning for adjacent land/sea use
22. State and commercial neighbours	26. State and commercial neighbours
23. Indigenous peoples	30. Indigenous and traditional peoples
24. Local communities	31. Local communities
25. Economic benefits	32. Livelihood benefits
26. Monitoring and evaluation	20. Monitoring and evaluation
27. Visitor facilities	29. Visitor facilities and services
28. Commercial tourism operators	27. Commercial tourism operators
29. Fees	28. Fees
30. Condition of values	35. Condition of natural values
(split into two questions)	36. Condition of cultural values
New question	18. Staff security
New question	22. Climate change
New question	23. Carbon capture
New question	24. Ecosystem services
New question	33. Threats
New question	34. Connectivity
New question	37. Conservation status of key indicator species
New question	38. Conservation status of habitats

Below we take each question in turn, as it appears on the METT 4 Excel sheet.

1. Legal status: This usually only refers to state-managed protected areas. In the case of many privately protected areas and indigenous and community conserved areas (ICCAs) legal status is not an option and this question is not applicable. The question can be marked as such and there is space provided to explain why the question is not relevant. Where such areas do have some formal status (e.g., a covenant or legal recognition of Indigenous Protected Areas) and are therefore recognised as protected areas, the METT assessment should be completed. Further information can be found in the IUCN *Guidelines for Protected Area Legislation* (Lausche, 2011).

2. Protected area objectives: This refers to the primary management objectives identified in the protected area attributes sheet. Lack of clear objectives probably means that management is itself undirected and likely to be inefficient: a process for confirming objectives, for instance a stakeholder workshop, should if necessary be noted in Actions to improve management. Key references include the original legislation establishing the reserve, in the case of state-run protected areas, and management plans, information and knowledge of day-to-day activities. [*Question 4 in the 2007 version of the METT.*]

3. Protected area regulations/controls: This refers to the existence of both legal regulations and customary controls; for instance, protected areas managed by private individuals, trusts or communities should still have clear rules regarding use of land and water. [*Question 2 in the 2007 version of the METT.*]

4. Planning for adjacent land/sea use: Planning for land and water use outside the protected area is generally outside the control of the protected area manager, indeed in some cases adjacent areas may be in different countries or different jurisdictions. But the decisions made can significantly affect the protected area, so it is important that the potential impacts of planned use of adjacent areas are assessed. Where threats are having a detrimental impact on the protected area it is important to record this, even though actions to minimise risk may be challenging, as these threats will have an overall effect on the chances of fulfilling the area's conservation objectives. Examples could include upstream dams that cut off water flows, major fish farming developments that increase pollution and create significant disturbance, or large-scale clearing in surrounding areas that isolate the protected area from other habitat areas. [*Question 21 (Planning for land and water use) in the 2007 version of the METT.*]

5. Protected area design: Issues to consider here include whether key species are adequately protected (for instance it would be an issue if a marine protected area omitted a nearby area where many of the constituent species breed), whether it is large enough to support viable populations, and whether events outside the protected area could undermine its value (for instance if a hydroelectric power project dammed a river and interrupted flow). It is also important to consider, where possible, projected future climate change influence in this assessment: for instance, if sea level rises, is there space in the protected area for a mangrove forest to retreat inland? [*Question 5 in the 2007 version of the METT.*]

6. Protected area boundary demarcation: It is important that staff, stakeholders and rightsholders recognise the boundary and that people know if they are encroaching the protected area. Maps and/or GPS systems are generally used to create the protected area boundary officially recorded in gazettement; however, the boundary on the ground can be different, and often associated with specific features. There is therefore often a need for boundaries to be interpreted according to the local context. Boundaries on land are often marked by a sign or marker and in marine areas by buoys or coordinates on charts and maps. [*Question 6 in the 2007 version of the METT.*]

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Stakeholder discussions outside Bwindi Impenetrable National Park, Uganda

7. Management planning: In most cases this will be a formal management plan, written down and in the case of government-managed protected areas often also approved by the relevant department or ministry. In other cases, management plans may be less formal, agreed through discussion with community members, and existing only as oral agreements, minutes of meetings or other customary arrangements. The aim of this question is to see whether management is following a set and logical course. [*Question 7 (management plan) in the 2007 version of the METT.*]

Additional points on management planning: These additional questions go beyond the basic assessment and identify whether good practices are in place in relation to management planning. All these additional questions should be considered during the assessment. If the area complies with the question being asked, add a tick in the box next to the question. The Excel will automatically generate the additional scores in the "Your additional points" field.

Each additional question is discussed in more detail below:

7a. 'Stakeholders' in this case refers to people beyond the immediate management authority, such as local communities or Indigenous peoples living in or near the protected area, sometimes also tourism operators, local government officials and industry representatives. If there has been no such involvement, the "actions to improve management" box should identify those people who should be involved in the future. Ensuring good governance and equal opportunity includes access by all groups and genders to the processes.

7b. Many formal management plans cover 5-10-year periods. But things can change over this length of time. For example, new pressures can develop, or new management opportunities can arise. This question captures whether there is a way to make sure such changes are integrated into management, and if it is easy for lessons learned to inform actions as management proceeds.

7b. The fact that monitoring takes place, and assessments are carried out, is no guarantee that the results are incorporated into management. The question addresses this and, if answered negatively, the "actions to improve management" box should include concrete, time-bound proposals to address the lack.

8. Regular work plan: This will usually refer to an annual plan, aimed at implementing the next stage of the management plan. You can answer this question even if you don't have a management plan in place. Again, this can be formal (written down and approved) or informal but it must be known about and agreed by all relevant parties. [*Question 8 in the 2007 version of the METT.*]

9. Resource inventory: In this case 'resources' refers primarily to biological and cultural values of the site. Have there been recent surveys of plant and animal species? Do managers know where culturally important sites or sacred natural sites exist, so these can be protected? In *Actions to improve management* it is important to identify knowledge gaps and suggestions for future surveys. [*Question 9 in the 2007 version of the METT.*]

10. Staff numbers: This assessment should address whether the protected area has sufficient staff to manage the site effectively and to fulfil its management objectives. It should include consideration of all people working in the protected area if supported by the government (e.g., the army is involved in some protected area management), NGOs or other funding sources. Answering this question might be slightly more difficult for privately protected areas or community-managed sites. Here, the issue will be more about having sufficient numbers of people involved for there to be capacity to manage rather than "employment" in a traditional sense. In some remote protected areas, with few pressures, there may be no permanent staff but rather one person will have oversight of several protected areas. Ideally, the answer to this question should be informed by a needs assessment of staff requirements against completing the actions outlined in the management plan/system. [*Question 13 in the 2007 version of the METT.*]

11. Knowledge and skills: This question addresses whether the people currently involved in managing the protected area (managers, rangers, support staff etc) require additional training to be able to manage the site effectively and fulfil its management objectives. Responses can help to identify where training programmes are needed, which can be noted in the "Actions to improve management" field. [*Question 14 in the 2007 version of the METT and the focus was on staff training.*] The question has been reworded to make its intent more relevant and the assessment questions more applicable for a wide range of protected area governance types, e.g., where the site is managed by the area's owners not hired staff.

12. Current budget: This question relates to the total amount of annual budget, rather than to budget security which is addressed in the next question (13). Virtually every protected area will consider themselves as inadequately financed! This is not aimed at identifying whether more money would be useful but whether there is sufficient budget to carry out effective management, implement the management plan and fulfil the protected area's management objectives. The question refers to the total amount of funding available to the protected area annually including government allocations, admission fees, project funding, donor support and similar, compared to the running costs of the protected area. The assessment should consider total actual costs (operational, staffing, equipment) deciding which of the multiple-choice answers best fits the situation. [*This was question 15 in the 2007 version of the METT.*]

13. Security of budget: The main question here is whether the budget is reliant on intermittent project funding or whether there is a reasonable chance of it being maintained over time – for instance because it is a core part of a government budget, or maintained through a private organisation, community, or has low costs and strong volunteer support. [*Question 16 in the 2007 version of the METT.*]

14. Management of budget: This question assesses whether budget expenditure is properly planned and monitored through the year or if there are over- or under-spends? Consider if accounts are published annually and audited. If the answer reveals serious weaknesses the "Actions to improve management" text should suggest concrete actions, such as drawing up an annual budget, hiring a qualified accountant or bringing in a permanent or temporary business manager. [*Question 17 in the 2007 version of the METT.*]

15. Equipment and facilities: This could include, for example, equipment such as vehicles, communication systems, tools, uniforms and contributory materials like fuel. Facilities can be buildings and other important infrastructure that is needed to manage the protected area, such as guard posts, offices etc. Note that visitor facilities are specifically dealt with in question 29. [*Question 18 in the 2007 version of the METT.*]

16. Law enforcement: Issues to consider include personal capacity (training, skills) and adequacy of equipment and infrastructure (vehicles, routes to access remote areas, etc.) along with an assessment of whether staff are familiar with laws, regulations and prosecution requirements. "Staff" relates to both those formally employed and those responsible for management in other governance types. The "Actions to improve management" section should identify needs if the score is low. [*Question 3 in the 2007 version of the METT.*]

17. Protection systems: The question focuses particularly on enforcement, and will be applicable in places where there is pressure from poaching, encroachment, illegal mining etc. In protected areas with no such pressures, designation and management can be judged "largely or wholly effective". This is less about capacity and resources for enforcement (already addressed in question 16) and more aimed at whether this capacity is being used effectively. Highly trained and well-resourced rangers are being outmanoeuvred by poaching gangs with even better resources; this question aims to determine whether current enforcement activities are sufficient for the pressures being faced. [*Question 10 in the 2007 version of the METT.*]

18. Staff security: This question assesses whether the safety of staff is considered in management, including the mitigation of threats where possible (e.g., through adequate equipment, training, etc) and the provision of support to minimise impacts when staff security is impacted (e.g., medical and life insurance, etc). Rangers and other staff face many threats and the results from a major ranger survey found that over 40 per cent thought the job was dangerous and recorded a range of deficiencies in equipment that if in place would make the job less hazardous (Belecky et al, 2019). [*This is a new question and was suggested in the development of the Bhutan METT+ (see case study).*]

19. Research: This could include research work carried out by the protected area itself but more usually covers research by associates, volunteers, students, citizen science recorders and academics. In the case of protected areas run by communities or Indigenous peoples it would include, for instance, surveys of species being used for subsistence, such as fish or non-timber forest products, to ensure a sustainable supply. Monitoring and evaluation are addressed in another question (20); here the emphasis is on particular research projects that can help to understand and thus better manage the site. The presence of researchers is not enough to evoke the top score, but only if research is properly integrated into the needs of protected area management. [*Question 11 in the 2007 version of the METT.*]

20. Monitoring and evaluation: This addresses monitoring and evaluation of both the management activities of the protected area, which impact on the condition of key values, and the threats to the protected area. In the evidence and justification section it would be useful to list what is monitored and how often. As with research, the stress is on properly integrating the results into protected area management, as monitoring and evaluation which is not linked back into management actions will have no impact on increasing management effectiveness and achieving an area's conservation objectives. [*Question 26 in the 2007 version of the METT.*]

Resource management covers a wide range of possible activities so it is particularly important to thoroughly complete the evidence and justification fields.
Monitoring in Sikhote-Alin Nature Reserve, Russia

21. Resource management: Management here refers to activities in addition to enforcement needed to ensure effective conservation of critical habitats, species, ecological processes and cultural values. It can include habitat creation (plant nursery, coral nursery), protection (fencing, enclosures, moorings) and restoration (reforestation, artificial reefs). It can also include fire management, invasive species control and protection of culturally and spiritually important sites. Where sustainable resource extraction is permitted, management will include monitoring of these resources, possibly introduction of temporary zoning etc. Management also includes active steps to protect culturally and spiritually important sites. Clearly for such a wide-ranging question, it is important that the evidence and justification field is completed with details of the various ways such management is carried out. [*Question 12 in the 2007 version of the METT.*]

22. Climate change: This question focuses on management adaptions to predicted climate change, and how these are already being implemented. [This is a new METT question as suggested in the first issue of the *METT Handbook* and was first proposed by WWF in 2009 to support REDD mechanisms, and by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) as part of the Protected Areas Resilient to Climate Change, PARCC West Africa project in 2012 (Belle et al., 2012).] Adaptation to climate change means reducing the vulnerability of natural and human systems against actual or expected climate change effects. Managing for climate change adaptation in protected areas includes:

a. Building a strong foundation: Assembling available knowledge and resources, planning for change, and developing a long-term capacity for informed, flexible management.

b. Assessing vulnerability and risk: Undertaking quantitative or qualitative analyses to determine which species, ecosystems, and other values are most vulnerable to changing conditions, and identifying the key vulnerabilities that pose the greatest risk to achieving conservation goals.

c. Identifying and selecting adaptation options: Recognizing and prioritizing strategic and tactical actions to achieve short and long-term adaptation goals in protected areas.

d. Implementing actions: Taking action based on the previous analysis and deliberation.

e. Monitoring and adjusting: Measuring indicators of success and failure and using that information to evaluate and recalibrate decisions (Gross et al., 2016).

23. Carbon capture: Carbon capture and storage describe the process of capturing and storing carbon dioxide before it is released into the atmosphere. Methods for preventing carbon loss in protected areas will depend on the ecosystems being managed. They might involve preventing fire in forests or grasslands where fire is not a necessary part of ecosystem dynamics or managing the timing and intensity of fire in fire-dependent ecosystems. In peatlands, this will involve maintaining natural water regimes and preventing fires from burning the peatlands. If natural vegetation is removed, this frequently also leads to loss of soil carbon (often a far larger store than the vegetation itself); soil carbon will generally take far longer to build up again even if vegetation regrows or is restored. Carbon capture can also be enhanced, where appropriate, through ecosystem restoration or other habitat management that increases the storage of carbon in standing vegetation or in the soil. [*This is a new METT question and links to the previous additional question on climate change.]*

24. Ecosystem services: Does management consider ecosystem service provision? This investigates both whether existing or potential ecosystems services are known about and, if so, whether some or all of them are being managed for. Because this is potentially an endless question, it is suggested that answers focus on the major ecosystem services already identified in the attributes section. Given that this is still a new issue for many protected area managers the "Actions to improve management" section should be specific about actions and next steps. [*This is a new question and relates to the new listing of main ecosystem services in the protected area attributes worksheet.*]

25. Education and awareness: This question covers education both for learning establishments, such as schools' programmes, and also the provision of more general educational opportunities for local communities or recreational visitors. Consideration needs to be made on what is appropriate, depending on the location and context of the protected area. [*Question 20 in the 2007 version of the METT.*]

26. State and commercial neighbours: This question is aimed at assessing the extent to which a protected area either co-operates with or remains isolated from the wider economy. Is there co-operation with government and commercial interests surrounding, impacting on and/or benefiting from the protected area? This could include water suppliers, hydroelectric plants, ranchers, forestry activities or similar. Note that tourism operators are the subject of their own question (27); while this question is aimed at assessing the extent to which a protected area interacts with the wider economy. It does not address local community land users but focuses on government and large commercial or industrial land users. The question can relate to transboundary cooperation where necessary. [*Question 22 in the 2007 version of the METT.*]

27. Commercial tourism operators: The presence of a protected area is a draw to tourists and thus a boost to the commercial trade. Tourism operators should be natural partners with protected areas, but this does not always happen. If this question generates a low score, the "actions to improve management" field could identify some of the key people it would be important to talk to and develop cooperation with. [*Question 28 in the 2007 version of the METT.*]

28. Fees: Not all protected areas should or do collect fees; this question is not applicable in these cases. The aim here is more to find out, where fees are an expected part of the protected area management, whether they are used to help management or simply disappear into the government and provide no support for the protected area. [*Question 29 in the 2007 version of the METT.*]

29. Visitor facilities and services: Not all protected areas need visitor facilities; this question is judged against the perceived need. Issues of adequacy and appropriateness are critical here, protected areas with low visitation do not require extensive visitor facilities. Answers should focus mainly on facilities inside the protected area but may also consider facilities immediately adjacent to the protected area, where these directly impact on visitor experience. [*Question 27 in the 2007 version of the METT.*]

30. Indigenous and traditional peoples: This will be not applicable in cases where there are no Indigenous peoples present. Note that different countries use a range of terms to describe such cultures: ethnic minorities, traditional peoples etc. Consider both formal consultation or less formal contact when judging the answer and consider issue of governance and equity. It is important also to discuss with the Indigenous peoples and understand how included they feel and find out their opinions of the protected area and its management. [*Question 23 in the 2007 version of the METT.*]

31. Local communities: this assesses the level of influence that communities have on the overall decision-making process: mere consultation is rarely sufficient. "Relevant decisions" refers to all decisions about aspects of management that affect local communities and their relationship and interaction with the protected area. [*Question 24 in the 2007 version of the METT.*]

Additional points on local communities and Indigenous peoples: these additional questions identify other important elements in relation to protected area management, local communities and Indigenous peoples. All these additional questions should be considered during the assessment. If the area complies with the question being asked, add a tick in the box next to the question. The Excel will automatically generate the additional scores in the "Your additional points" field.

Each additional question is discussed in more detail below:

31a. This question focuses on open communication and trust; it is particularly important to discuss why if this score is given.

31b. Could include both programmes directly related to the protected area, such as managed use of non-timber forest products or fish resources, and programmes initiated by the protected area for the general good, such as developing schools or supporting healthcare.

31c. Again, evidence is needed if this additional score is given; examples could include voluntary patrolling, help with surveys, providing political support amongst local government etc.

32. Livelihood benefits: This question is aimed explicitly at local communities. Benefits can include direct jobs, Payment for Ecosystem Service schemes, indirect benefits from increased tourism or sales to visitors, and other options such as guiding. To score 3 on this indicator, economic activity associated with the protected area should be a substantial contributor to the local economy. This indicator only refers to economic benefits arising from legal or sanctioned activities, which do not impact the protected area's conservation objectives, and not those arising from illegal activities. [*Question 25 (economic benefit) in the 2007 version of the METT.*]

33. Threats: This should consider those threats identified in the threat assessment as having the greatest extent and severity. The focus is then on how the identified threats are being managed. This question captures and summarises the information completed in the threat assessment at the start of the METT. Please refer back to the assessment when answering this question and reflect the management responses given in the threat assessment in the "actions to improve management" field. [*This is a new METT question.*]

34. Connectivity: Protected areas remain vulnerable if the species they contain are genetically isolated and the protected area acts like an island. This question focuses on functional connectivity of the protected area, addressing its direct linkages to other natural ecosystems, use of biological corridors, etc. It may not be applicable for some sites (e.g. remote offshore islands protected because of unique flora and fauna, or micro-reserves established to protect particular crop wild relatives). But if not answering this question, a careful explanation of why is needed. For more information see Hilty et al, 2020. [T*his is a new METT question.*]

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Monitoring natural values is a key activity for most protected areas. Etosha National Park, Namibia

35. Condition of natural values: This question covers the current condition of the important natural values of the protected area. Ideally, the protected areas should have monitoring data relating to key species or habitats, and possibly access to remote sensing data to compare vegetation cover over time. The assessment should compare the current condition to changes since the protected area was first designated OR ten years previously if earlier data are not available.

Before question 35 there is an additional "Detailed Assessment of Values" sheet which should be completed where there are sufficient data available on the condition and trend of values to be able to make an assessment. This additional assessment does not contribute to the overall "score" of management effectiveness in the METT but can inform the rating on Condition of Values made in Question 35. In completing the assessment table, it will be important to review available monitoring results and to draw upon the knowledge of researchers, managers and community members in reaching a consensus understanding of the condition and trend in values. The assessment will be prefilled for each of the values identified in the attributes sheet. For each value assessed, a justification of the assessment and management suggestions for improving the condition and/or trend should be included. The Excel sheet provides full guidance on the criteria to be used when completing this assessment.

If there is insufficient knowledge to make this additional assessment, this should be indicated in the tick box provided and Question 35 should then be answered based on available knowledge. The informed opinion from managers and rangers, or from other management groups such as local communities, will give important indications of the condition of natural values. Given the significance of this question, a careful listing of "evidence and justification and information sources" is particularly important. Some sites and protected area agencies choose to expand this question to include additional questions relating to particular indicator species. [*This was question 30 (condition of values) in the 2007 version and has now been split into two (35: condition of natural values and 36: condition of cultural values). The METT was not designed to assess conservation outcomes, as this involves detailed monitoring not conducive to a rapid assessment. But there have been consistent calls to enhance the METT's outcome assessment, hence these additions.*]

Additional points on the condition of natural values: these additional questions identify other important elements in relation to protected area management and natural values All these additional questions should be considered during the assessment. If the

area complies with the question being asked, add a tick in the box next to the question. The Excel will automatically generate the additional scores in the "Your score" field.

Each additional question is discussed in more detail below:

35a. Monitoring: To really know if nature conservation values are increasing or decreasing, monitoring data are needed. It is practically impossible to monitor everything, so most sites choose to monitor a few key species, or areas of natural vegetation, and to keep a more general note of other obvious changes. Monitoring can be carried out by rangers (for instance as part of SMART monitoring), by research scientists that come and make periodic counts, by volunteer citizen scientists or by local communities.

35b. Management programmes: This implies something more than day-to-day management, such as restoration programmes, eradication of invasive species, habitat creation or special efforts at reducing poaching threats. These will often include special, time-limited programmes funded by government or donor grant, or temporary changes in management using existing resources in different ways. Give details in the "evidence and justification" section.

35c. Routine part of management: Some long-lasting threats and pressures need to be addressed as a routine part of management, such as anti-poaching controls, regular removal of invasive species, or seasonal supply of supplementary water. The question implies that the management action is a deliberate step to addressing an actual or potential threat. Again, give details in the "evidence and justification" section.

36. Condition of cultural values: Many protected areas contain important cultural values: sacred natural sites, pilgrimage routes, historic buildings, archaeological remains, etc. Protected area managers are generally at least in part responsible for the upkeep of these; in the case of some privately protected areas or ICCAs these may be the main values stimulating protection. This question will not be relevant to all sites. Note that some cultural values may also be partly natural values, such as such as maintenance of ancient woodland coppicing systems, or traditional nomadic pastoralism. [*This question is new, although it comes from splitting the 2007 version question 30 into two parts.*]

Additional points on the condition of cultural values: these additional questions identify other important elements in relation to protected area management and cultural values. All these additional questions should be considered during the assessment. If the area complies with the question being asked, add a tick in the box next to the question. The Excel will automatically generate the additional scores in the "Your score" field.

Each additional question is discussed in more detail below:

36a. Monitoring: This is likely to be less formal than for monitoring of natural values but implies that some regular monitoring is taking place; for example, that rangers regularly check that historical or cultural sites are undamaged and – where appropriate – that there is regular contact with institutions or communities that are interested in these sites.

36b. Management programmes: tick if there are particular management programmes in place to protect cultural values, such as fencing of archaeological remains, repair of ancient trackways or restoration of traditional woodland management. Give details in the "evidence and justification" section.

36c. Routine management: tick here if the management and operational plans include routine management of cultural sites; this might include working with local communities to ensure that sacred natural sites remain intact, zoning areas to avoid visitor damage to historical or prehistoric remains or regular maintenance of traditional management systems. Again, give details in the "evidence and justification" section.

37. Conservation status of key indicator species: This is a key question to find out how well the protected area is doing and gives additional information to back up question 35; a definition of an indicator species is given in box 4 below.

As with question 35, there is an additional "Detailed assessment of species" sheet which should be completed where there are sufficient data on the status of at least some key indicator species to be able to make an assessment. This additional assessment does not contribute to the overall 'score' of management effectiveness in the METT but can inform the rating on Conservation Status of Key Indicator Species that is made in Question 37. In completing the additional assessment, it will be important to review available monitoring results and to draw on the knowledge of researchers, managers and community members in reaching a consensus understanding of the status of key indicator species. The Excel sheet provides full guidance on the criteria to be used when completing this assessment.

If there is insufficient knowledge to make this additional assessment, this should be indicated in the tick box provided and Question 37 should then be answered based on available knowledge.

If the protected area implements a monitoring protocol to measure the condition of key indicator species regularly, using specific indicators and defined thresholds, the results will help answer both the additional assessment and question 37. We suggest you score C if some but not all indicators have improved. [*This is a new METT question.*]

> **Box 4: Definition of indicator species**
>
> A species sensitive to environmental change, which can therefore provide a measure of health for the ecosystem. Indicator species can signal a change in the biological condition of a particular ecosystem, and thus may be used as a proxy to diagnose the health of an ecosystem. For example, plants or lichens sensitive to heavy metals or acids in precipitation may be indicators of air pollution. Indicator species can also reflect a unique set of environmental qualities or characteristics found in a specific place, such as a unique microclimate. However, care must be exercised in using indicator species. Judging an ecosystem based on the response of a single indicator species might be like taking a pulse on a patient and immediately prescribing a treatment without a) further examination, b) other indicators such as blood pressure, or c) knowledge of the patient's past medical history.

38. Conservation status of habitats: This question focuses on the status of habitats within the protected area over the five years previous to the date of the assessment. If your protected area implements a monitoring protocol to measure the condition of habitats regularly, using specific indicators and defined thresholds, the conclusions from your monitoring activities will help answer this question. We suggest you score C in cases where some but not all habitats have improved substantially. [*This is a new METT question.*]

As with questions 35 and 37 there is an additional "Detailed assessment of habitats" sheet which should be completed where there are sufficient data on key habitats (e.g., seagrass beds, old growth forests, lakes and rivers) present in the protected area to be able to make an assessment. It does not contribute to the overall 'score' of management effectiveness in the METT but can inform the rating on Conservation Status of Key Habitats that is made in Question 38. In completing the additional assessment, it will be important to review available monitoring results and to draw upon the knowledge of researchers, managers and community members in reaching a consensus understanding of the status of key indicator species. If there is insufficient knowledge to make this additional assessment, this should be indicated in the tick box provided and Question 38 should then be answered based on available knowledge. The Excel sheet provides full guidance on the criteria to be used when completing this assessment.

Developing an action plan to implement the METT findings is vital step in the METT process.
METT Workshop, Bhutan

5.8. ACTIONS TO IMPROVE MANAGEMENT

Once you have completed the METT 4, a table will show what you have recorded in terms of all the "actions to improve management" that were identified as needed to increase or maintain your METT scores. The first column of the table will automatically be updated to include the scores you have provided for each question. In the second column you can add previous METT scores for comparison. The third column will take the text from the "*actions to improve management*" sections of each of the multiple-choice questions.

The table then allows you to develop an action plan by identifying for each of the suggested responses:

- By when? Providing a timeline for actions
- Who is responsible? Identifying a point person responsible for each action
- Who else needs to be engaged? Identifying other staff/partners who need to be involved
- Budget needs. What funds are needed, which can also include source of budget (i.e., core funds or project support)
- Other comments

This table is the most important part of the METT in that it can serve as the basis of a workplan for the protected area and will make it easier to follow-up on the results of the METT assessment.

We suggest that the table should be used soon after completion of the METT to draw up a workplan for implementation. Actions should be divided between those that are feasible within the current budget and staff members, and those that will require additional money and perhaps extra people or expertise. Then for each, actions should be ordered by priority. Those of high priority and within the current budget can be written into the current or at latest the next year's workplan. Priorities that need additional resources need to be identified in current and future funding proposals.

5.9. DATA MANAGEMENT

The worksheets in the METT 4 Assessment Excel workbook are locked to prevent inadvertent changes to text and formulas, except for those cells where information needs to be entered as part of the assessment process. An overview of results is accumulated on the worksheet "METT 4 questions and scores", which can be printed if a hard copy is required. Similarly, the "Actions to improve management" worksheet can be printed once it has been completed. Both are best printed in landscape format.

Data from multiple assessment can be compiled in a separate Excel file METT4_exported_data.xslm that is supplied along with the main METT 4 Excel file. This exported data file should not be renamed until data from all individual assessments have been exported to this file. Once data export from all assessed sites has been completed, the file can be re-named with an identifying name if desired. **Changing the filename prior to completing data export to this file will result in an error.**

To export data, both the workbook that contains the assessment and the file *METT4_exported_data.xslm* must be open. There are data export buttons at the bottom of the "Protected Area attributes", "Detailed assessments of threats", and the "METT4 questions and scores" worksheets in the METT 4 Assessment Workbook. Clicking on these buttons will write the data from that sheet to a corresponding worksheet in the *METT4_exported_data.xslm* file as a single row of data using the name of the protected area specified in cell B6 in the "Protected area attributes" worksheet as a common data field across the three worksheets. Each time a button is clicked it will write a new line of data to the data file so this should only be done once for each worksheet. The data file can then be used with the METT Assessment file from another protected area to accumulate the information from assessment of multiple protected areas, or assessments over time for a single site. Information from the data file can then either be analysed in Excel or moved to a relational database for further analysis.

5.10. TRANSLATING THE METT

Older versions of the METT are available in multiple languages (e.g., French, Spanish, Chinese, Russian, Romanian and Bahasa Indonesian), but there is now a need to generate translations of the METT 4 and this newly revised guidance.

The METT 4 is slightly more complex to translate due to the various functions in the Excel format. However, a file specifically for translations and associated guidance has been developed. Please post a message on the METT Support Group Facebook[30] page to get details on how to access this file.

Approved translations (e.g. where the Excel file has been checked for functionality and the translation has been checked by a PAME / METT expert) will be loaded unto the protected planet website. If you are planning to translate the METT or wish to take part in a translation process please use the METT Support Group Facebook page to share information.

Case study 3

Papua New Guinea: Protected Areas Assessment Project

Authors: Fiona Leverington, Ann Peterson and Greg Peterson

Participants from Varirata National Park start the METT process by drawing images of the main values of their protected areas, this helps easy translation into a more formal statement of values and benefits and then completion of the adapted METT

In 2016 the Government of Papua New Guinea (PNG), through its Conservation and Environmental Protection Agency (CEPA) and with the support of United Nations Development Program (UNDP) and the Secretariat of the Pacific Regional Environment Program (SPREP) and the Global Environment Facility, organised an evaluation of its protected areas, as part of the process to improve management effectiveness.

The need to undertake PAME assessments is enshrined in PNG's Policy on Protected Areas, which commits to regular evaluation and to taking remedial action to improve effectiveness over time (Independent State of Papua New Guinea, 2014). The development of a PAME system for PNG therefore needed to be practical and economic to apply and CEPA staff and other partners needed to understand the methodology and how to best apply it in the field. Therefore, a relatively simple and straightforward methodology was developed based on the 2007 METT (METT 3). As most protected areas in PNG are on land owned and managed by the customary landowners, and have no government employees, the METT needed to be adapted to local circumstances. Many of the 2007 METT questions had been worded for people very familiar with protected area issues, and in the PNG context this would have caused some level of confusion or ambiguity, particularly for those unfamiliar with protected area management jargon. Rather than relying only on facilitators to clarify questions, explanatory notes were added to the questionnaire for most questions.

This helped improve its reliability and to increase consistency when the questions are applied at different times and by different people. However, it is also essential that the questionnaire is applied in workshops with trained facilitators who have a more in-

depth understanding of the questions and the logic behind them. In some cases, the questionnaire part of the METT was duplicated so respondents could choose between the traditional METT question (for the few government-owned protected areas) and a new version (for community areas). Other adaptations included keeping the standard threat classification (Salafsky et al., 2008) used in the METT but altering the wording to make it clearer within the classification's meaning.

A recognised weakness of the 2007 METT questionnaire was the lack of information gathered about protected area values and outcomes. If the METT complements other information or assessments this is not a problem but given the serious paucity of even basic information about most of the protected areas in PNG, it was considered essential to boost the data collected about these aspects of effectiveness. The PNG-METT therefore added a section where people were asked to discuss and nominate the primary values of their protected area, and then to use words or pictures to describe these values or benefits. Identification and assessment of protected area values, benefits and outcomes have been substantially expanded in METT4 and substantially mirror the changes that were made to the PNG METT. The assessment of protected area outcomes was enhanced through the evaluation of the condition and trend of the protected area values. Participants are asked to use the key values that they listed in the first part of the workshop. The condition of these is then rated as poor to very good, using the condition criteria developed by The Nature Conservancy and the Conservation Measures Partnership (Parrish et al., 2003). The trend is then described as improving, stable or deteriorating. Information sources and explanations are recorded for any information provided. A final question was added to help begin the process of strengthening management of the protected areas: "*As the final task, I would like you to think about all the values, threats and issues that have been raised and to list three things that would help you to make your protected area better in the future.*"

The PNG METT was developed through a staged process. A draft methodology was devised and shared with staff of CEPA, UNDP and some civil society representatives at a workshop in Port Moresby in April 2016. The methodology was then trialled and adjusted in the field before being finalised. In 2021, the methodology is again being revised to be more compatible with the METT4 and to ensure that all questions from the GEF-METT are also answered. This is important to save duplication of effort. A detailed online training course has been organised and presented to build local capacity. This methodology will soon be tested with a number of communities.

PNG has an excellent opportunity to ensure that regular PAME studies are undertaken to show the changes and hopefully improvements in management over time. An important part of the METT process has been the development of summaries for each protected area, information gathered through the PNG-METT, including the threats and values, has now been used as the basis of management plans. In addition, a detailed report of the state of protected areas across the country was produced (Leverington et al., 2017).

As PNG is still beginning the journey of developing an effective protected area system, the PAME assessment is providing important baseline information and guiding future developments across the protected area network.

This case study has been sourced from Leverington et al., 2016 and updated in 2021.

6. IMPROVING THE QUALITY OF METT ASSESSMENTS USING SMART EVIDENCE

Anthony Dancer, ZSL; Michelle Gan, WWF; Rohit Singh, WWF; James Slade, Re:wild; Paul van Nimwegen, IUCN; Alexander Wyatt, WWF

The METT is one of a suite of tools which have been developed, and widely adopted, to aid conservation management. Making the linkages and sharing developments between tried and tested tools will help practitioners integrate monitoring, research and assessment results and improve adaptive management capacity. The SMART tool allows practitioners to collect information about the areas they manage, and to use that information to evaluate, adapt and improve conservation strategies over time. This section introduces SMART and discusses how SMART data can be used to inform METT assessments.

Photo: Site and species based standards are now being developed to further assess protected area effectiveness

Self-assessment PAME systems, such as the METT, are commonly criticized for being subjective and relying on stakeholders' qualitative perceptions, which are open to bias. Consequently, while METT assessments generate valuable information on how management was carried out (processes and outputs), and thus indications for how management might be improved, the information they provide on whether that management was successful (outcomes) can be limited, hampering the tool's capacity to enable adaptive management.

Recent, widespread uptake of tools for site-level monitoring of biodiversity, threats, and management responses in protected areas and other effective area-based conservation measures (OECMs), such as SMART,[29] present a promising opportunity to improve the quality of METT assessments in sites around the world. Such tools, which facilitate regular, standardized, field-based data collection, and which provide a platform for automated analysis and sharing of these data, are increasingly ubiquitous, and could provide many METT assessments with a critical link to independent, quantitative information. SMART, for example, is now the most widely used technology solution for monitoring of conservation areas globally, with deployments in over 900 sites in 70 countries, and with 16 countries adopting it as their national standard platform for conservation data management (Figure 2). Adoption of SMART has expanded and diversified rapidly since the tool's launch in 2011, ranging from community conservancies smaller than 100 km² to national parks larger than 20,000 km².
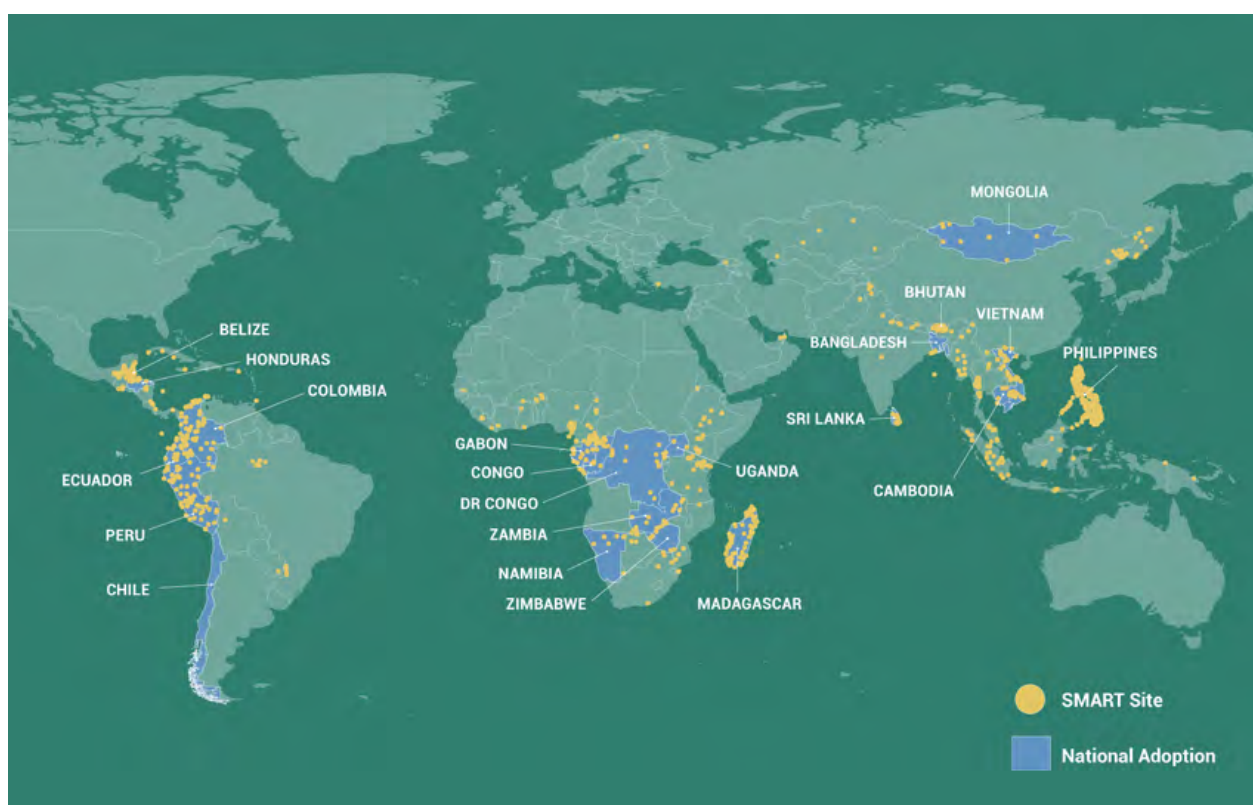

Figure 2: Conservation areas reporting use of SMART and countries promoting national adoption. © SMART Partnership, 2021

The scale of uptake of SMART and the METT, and consequent overlaps in use, represents an opportunity to facilitate greater use of quantitative evidence during METT assessments. The organizations responsible for development of the METT and SMART are working together to develop methods to enable this process, and to enhance both tools' capacity to enable adaptive management of conservation areas. What follows is a brief introduction to the SMART approach to monitoring in conservation areas and its implementation, and preliminary, summary guidance for using and interpreting quantitative evidence from SMART monitoring to inform and justify METT assessments.

6.1. THE SMART APPROACH TO MONITORING CONSERVATION AREAS

SMART (Spatial Monitoring And Reporting Tool), developed by the SMART Partnership,[1] is an integrated, multi-platform conservation area management system, which, in combination with associated capacity building and standards (collectively termed 'the SMART Approach'), is designed to improve the effectiveness of conservation area management, by enabling practitioners to collect information about the areas they manage, and to use that information to evaluate, adapt and improve conservation strategies over time (Figure 3).

Figure 3: The SMART approach to adaptive management of conservation areas, which leverages SMART software to enable practitioners to collect data in the field (e.g. during ranger patrols), to automate administration, analysis, and reporting of those data, and to use results to evaluate, adapt and improve conservation strategies (e.g. enforcement patrol plans) (Cronin et al, 2021)
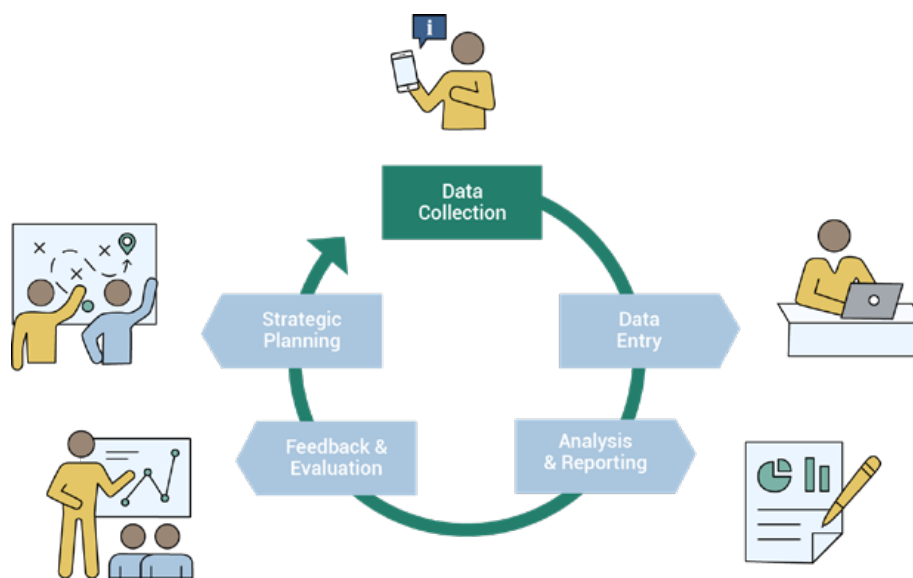
SMART is built on a foundation of field-based monitoring by rangers, park staff and community members, and encompasses three software platforms: SMART Mobile, a smartphone app for standardized, in situ collection of observation data and tracklogs (e.g. during ranger patrols, or site surveys); SMART Desktop, a desktop solution for administration, analysis, mapping, and reporting of collected data, and strategic planning of future management activities (e.g. patrols); and SMART Connect, a cloud-based solution for centralized data management and sharing, and sending real-time alerts to staff in the field.

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1   Current SMART Partnership members (as of 2021) include: Frankfurt Zoological Society, Re:wild, North Carolina Zoo, Panthera, Peace Parks Foundation, Wildlife Conservation Society, Wildlife Protection Solutions, World Wildlife Fund, and Zoological Society of London.

Box 5: Getting started with SMART

Successful implementation of SMART requires a long-term commitment by the implementing and technical support agencies. When deciding to adopt SMART it is vital to understand exactly what the tool can and cannot do. More information, including a full guide to getting started, can be found on the SMART website.

The following questions should be considered before deciding to adopt the tool:

1. Is the site suited for SMART?
   - SMART may not be needed if there is an existing monitoring system.
   - A formal management structure, focused on adaptive management, is essential for successful SMART implementation.
   - Endorsement for the use of SMART should be obtained from the management authority.
   - Active field patrolling is required for data to be obtained

2. What are the key capacity, financial, and management needs for SMART implemenation?
   - A commitment to improving management systems by management.
   - Training for staff involved in the SMART process, from management to database administrators to field staff.
   - Sufficient budget to obtain necessary equipment and deliver training.

3. What factors ensure long-term success of SMART implementation?
   - Alignment and inclusion of SMART with management requirements and procedures.
   - Consideration of SMART in management plans and budgets.

Assuming a site matches these requirements, the following steps should be taken when adopting:

- Define management information requirements via a thorough needs assessment.
- Define management analysis and reporting needs, drawing on existing requirements.
- Decide how SMART data will be collected and stored. SMART data can be collected using mobile devices (via SMART Mobile) or simply through patrol forms and GPS devices, and stored offline on a desktop computer (via SMART Desktop) or online (via SMART Connect).
- Design and configure a site-specific data model and database, drawing on the information above.

Costs of SMART Implementation

Costs will differ depending on scale of implementation (size of site, number of rangers, specific workflows, etc.), data collection method, and whether data are stored offline or online. Associated costs include the procurement of at least one laptop to host SMART software and the site's SMART database, GPS devices and / or mobile devices (rugged devices are recommended), server costs (SMART Connect only), and regular training workshops for those involved in all levels of implementation, from senior management to data collectors.

6.2. GENERATING EVIDENCE FOR METT ASSESSMENTS USING SMART

In addition to informing adaptive management of site-level conservation strategies, quantitative data collected and analysed using SMART can also be used as additional lines of evidence during PAME assessments, including the METT, where those data are available. This section describes typical outputs from SMART relevant to the METT, and the process for generating those outputs using SMART software.

SMART was originally developed for and is still primarily used to enable law enforcement monitoring by rangers on patrol in conservation areas. Rangers using SMART record and georeference observations of biodiversity, threats to biodiversity, and law enforcement responses, as part of their day-to-day duties while on patrol throughout sites, providing a regular source of spatially and temporally explicit data on these attributes. The default SMART monitoring data model is structured accordingly, across four primary observation types, each of which contains common subcategories and defined attributes, including:

1. Wildlife (e.g. direct observations or indirect signs of target species)

2. Signs of human activity threatening wildlife, both legal and illegal (e.g. snares or camps indicating poaching, direct observations of people illegally fishing or legally harvesting non-timber forest products, chainsaw sounds indicating illegal logging), and patrol actions undertaken in response (e.g. snare removal, arrests).

3. The condition of natural features used by wildlife (e.g. water holes)

4. Patrol positions (e.g. patrol start, stop and rest points)

SMART data models are designed to be flexible and customisable, and are often adapted to capture and analyse information from non-patrol sources (e.g. line transects, point counts, park entry points) and other features of interest (e.g. condition of cultural, social or economic attributes, instances of human-wildlife conflict, infrastructure, staff participation in training, etc.). Observations are generally linked to a suite of similarly customisable metadata (i.e., observer identity, team identity, type of patrol/survey, mode of transportation, and more), and can be recorded as standalone observations independent of patrols/surveys. Other data sources can include field sensors (e.g. camera traps), entities (e.g. individual animals monitored by GPS-tracking devices), or gathered intelligence.

SMART software facilitates automated storage, analysis, mapping, and sharing of monitoring data, providing a readily accessible source of information on spatial and temporal trends in common attributes throughout conservation areas with relevance to the following aspects of METT assessments:

1. Detailed assessment of threats, including extent and severity. Observations of human activity captured using SMART are generally classified according to the "unified classifications of threats" developed by the Conservation Measures Partnership (CMP) (Salafsky et al., 2008), upon which the METT threat typology is based.

2. Condition of natural values (question 35).

3. Conservation status of key indicator species and habitats (questions 37 and 38, respectively).

To facilitate this process, SMART is built around a software tool known as the Business Intelligence and Reporting Tools platform, or, BIRT. The BIRT platform allows users to develop automated reporting templates within SMART, which are linked to database queries and summaries designed to analyse and visualise monitoring data. Queries and reports can be saved and generated repeatedly, based on users' needs and temporal requirements (i.e, weekly, monthly or annual reports), and can be as complex or simple as required (e.g. from number of patrols, distance patrolled, and number of snares removed, to complex tables and maps of effort-corrected observations and/or threats). Future iterations of SMART will include standardised queries and report templates designed to generate outputs specifically for METT assessments.

6.3. INTERPRETING EVIDENCE FROM SMART

Evidence from SMART can be used to inform METT assessments, but should be generated and interpreted with care, and with due consideration to potential biases in data collected by rangers on patrol, and in common threat and outcome metrics which draw on patrol data.

Firstly, data collected by rangers on patrol may not conform to the default data model described in the previous section. Indeed, practitioners typically adapt the default data model to meet their sites' specific monitoring targets and management objectives, so outputs available for METT assessments will vary between sites. Importantly, the primary purpose of ranger patrols in protected areas is generally law enforcement, with monitoring conducting as a secondary concern. Consequently, data may not be captured consistently according to the data model. Furthermore, while many sites rely on external training providers to implement SMART, self-assurance of staff competence is important to ensure data integrity. Field staff transitioning from simple observation recording (e.g. patrol notebooks, verbal reports) to more complex data collection methods may lead to an increase in information duplication, falsification and/ or misinterpretation of observations. Designated data managers should be competent in assuring the quality of data and assessing the competence of field staff to collect data using a system such as SMART. Pre- and post-patrol ranger briefings can help to ensure quality control, and decision-making personnel should ensure that patrols are not overburdened with data superfluous to patrol mandates. The SMART Partnership has recently developed a comprehensive SMART competence standard register, with further support materials in development to assist sites with determining staff competency.

Secondly, evidence should only be used where sufficient data are available, and in which there is confidence in monitoring results. As the primary purpose of ranger patrols is enforcement, patrol effort is often directed towards locations and times where illegal activity is expected to occur or target species are expected to be present, which may lead to non-random or patchy monitoring effort, and provide little information on species and threats outside of these areas. Moreover, resource limitations in many PAs constrain managers' capacity to ensure broad, consistent patrol coverage. Consequently, evidence should only be used where data have been collected using robust monitoring protocols, or where appropriate methods have been used to correct for biases in data. SMART software includes simple analyses to correct for variation in monitoring effort, although catch per unit effort metrics should always be interpreted carefully (e.g. see Keane et al., 2011). More sophisticated methods for accounting for biases in patrol survey effort are also in development (e.g. using Bayesian hierarchical models, see Critchlow et al., 2015). Future SMART queries designed to generate evidence for METT assessments will include confidence scores to help guide interpretation.

6.4. CLOSING THE ADAPTIVE MANAGEMENT LOOP

The development of methods to facilitate generation and interpretation of evidence from SMART for METT assessments is the first step in a broader collaboration between the SMART Partnership and the METT's developers to increase alignment and share learning. Ultimately, both tools have the same goal: to enhance management effectiveness in protected areas and OECMs by enabling adaptive management. However, while SMART and the METT are widely used for regular monitoring, both tools have struggled to help practitioners consistently achieve adaptive management. The SMART-METT collaboration aims to strengthen both tools' capacity to close the adaptive management loop, including, for example, by making METT results more relevant and useful for decision-making by providing a link to independent, quantitative outcomes data, and by providing a pathway to ensure that evidence generated using SMART is used beyond day-to-day patrol management in evaluations of management effectiveness.

7. CONCLUSIONS

This review has provided a chance to spend some time looking carefully at the way that the METT has been used, from small beginnings into a global tool. To some extent a victim of its own success, along with the benefits there are some evident weaknesses and things that could usefully be changed, improved, added to or explained more clearly. The following section draws together some overall conclusions and makes recommendations for future steps.

Photo: The assessment of management effectiveness relies on good base-line data gathered from surveying and monitoring. Surveying coral reefs in Fiji

Many countries use the METT as the introductory tool for looking at management effectiveness of protected areas. First assessments in Turkmenistan

The METT works well as a quick and simple way of collecting information about the status and trends of management in protected areas, and it provides information that can help drive improvements in management. For increasingly cash-strapped protected area agencies, the METT is a cost-effective option that in addition does not make unreasonable demands on staff time. But it is also open to deliberately distorting the results and, much more commonly, to poor application (e.g., not reviewing the METT to assess training/adaptation requirements before starting implementation, not completing the narrative sections so reducing its ability to drive adaptive management or not including a range of staff and stakeholders in the process etc) that reduces accuracy. METT 4 addresses some but not all of these drawbacks. This handbook aims to improve the way in which the METT is applied more generally and hence the usefulness of the results to protected area management.

Given the qualitative approach and the reliance on individual judgement, the METT is likely to be better at comparing performance in one site over time than at comparing between different sites. But analysis of the global database shows that it can also provide useful information about the general status of management effectiveness of protected areas, as long as data are treated with the necessary caution. Overall usefulness of the METT for institutions such as WWF is likely to increase as the total number of assessments, and particularly the number of repeat assessments, continues to grow.

METT results have already helped to identify those management processes critical to success, and in turn to set best practice standards for protected areas that reflect the real experience of many thousand managers and rangers around the world, rather than being based on a few case studies. The focus of protected area capacity building is now moving beyond assessments towards the establishment of globally accepted standards and, increasingly, third-party verification that these standards are being met. Conservation Assured | Tiger Standards (CA|TS) and the IUCN Green List of

Protected and Conserved Areas are two concrete examples. However, these standards are predicated on the assumption that management effectiveness assessments are being carried out as an essential first part of the assessment. As the favoured first assessment system, use of the METT will spread further as these systems develop. The revised METT 4 is now able to provide evidence against a much wider set of the criteria and indicators used in systems such as the IUCN Green List of Protected and Conserved Areas, especially in relation to the more detailed assessment of conservation outcomes and issues such as management of climate change.

Many variations on the METT have also emerged over the last years, as people have modified the original questions and format to fit different biomes, management approaches and national priorities. Along with modifications for freshwater and marine protected areas, variations have been developed for community forest areas and some countries wish to change the questions the better to fit national conditions. Some users appear to need to make some modifications as part of the socialisation process of getting used to and excited about application. Whether or not such changes are to be welcomed depends to a large extent on whether the priority is for a comparable global dataset, or for a plethora of systems that best fit national priorities. Attempts to reconcile these two objectives include development of a global list of core indicators, which allow many different PAME systems to be compiled with respect to all their critical data. As the METT continues to be modified (even the GEF has made changes to the original) use of the core indicators may be increasingly relevant for METT results as well.

As well as seeing various modified version of the METT, the conceptual design of the METT has also been used as a template for other tools. One of the most welcome is SAGE: the Site-level assessment of governance and equity methodology. In the first version of this Handbook we noted that "Although there has been much work on developing tools to assess social and governance issues of protected areas management, there remains no equivalent tool such as the METT for measuring progress towards the CBDs goal of equitable protected area management." The SAGE tool (see case study 4) builds on the METT design and thus provides the perfect complementary tool for assessing equity and governance. The tool is now being applied around the world, and by the end of May 2021 SAGE will have been used at 19 sites in 12 countries including Africa (5), Asia (3), Europe (2) and Latin America (2) with plans for assessments at a further 20 sites by the end of September.

Case study 4

From METT to SAGE: complementing management effectiveness assessments with assessments of governance and equity

Author: Phil Franks

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SAGE training in Padu Banjar Forest, West Kalimantan, Indonesia

Site-level assessment of governance and equity (SAGE) is a methodology for assessing the governance and equity of measures to conserve biodiversity and ecosystem services, including protected and conserved areas (PCAs) and associated measures to support conservation such as benefit sharing schemes. SAGE uses a multi-stakeholder process of 12 steps (see figure 4) which starts with stakeholder analysis. In the assessment itself (steps 2.2 and 2.3) representatives of the key stakeholders, working in groups with similar interests, complete a multiple-choice questionnaire with the same format as METT including supporting evidence and ideas for actions to improve governance and equity.

Figure 4: The SAGE process
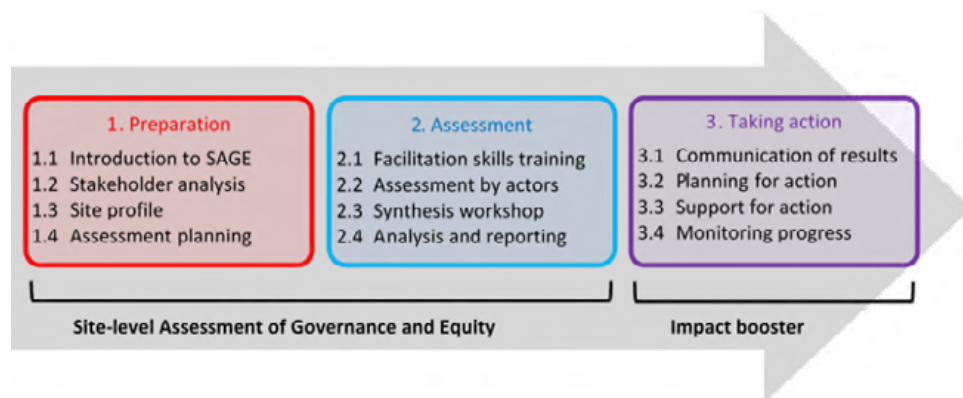
SAGE has two objectives. The primary objective is to enable site-level actors to improve the governance and equity of conservation and associated measures in order to improve both social and conservation outcomes, and following the actual assessment there is a third phase designed to boost this impact. The second is to generate information for actors at higher levels for management oversight, improving governance of a PCA system, and national and global reporting. In addition, SAGE is also being used as a tool for applying quality standards for PCA management and governance such as the IUCN Green List.

Just as METT is based on a framework with six elements, SAGE is based on a framework of ten principles of effective and equitable governance (see table 3). These are based on the IUCN framework of governance principles for protected areas, and are included in guidance that was endorsed by CBD Parties at COP14. For each principle there are four multiple choice questions making a total of 40 questions. In the current version of the SAGE questionnaire ten of these questions map onto six METT questions (30, 31, 31a, 31b, 33, 37), but additional questions could be added to SAGE to cover other METT questions and work is planned to do this. The other 30 SAGE questions cover aspects of PA governance not addressed in METT – see table 3.

Table 3: SAGE principles of effective and equitable governance

| Equity: recognition | 1. Recognition and respect for the rights of community members |
	2. Recognition and respect for all relevant actors and their knowledge
Equity: procedure	3. Full and effective participation of all relevant actors in decision-making
	4. Transparency, information sharing and accountability for actions and inactions
	5. Access to justice including effective dispute resolution processes
	6. Fair and effective law enforcement
Equity: distribution	7. Effective mitigation of negative impacts on community members
	8. Benefits equitably shared among relevant actors
Equity: Other governance	9. Achievement of conservation and other objectives
	10. Effective coordination and collaboration between actors, sectors and levels

As with METT, SAGE results can be summarised in a radar diagram although with SAGE the results can be disaggregated by stakeholder group. Figure 5 below is from Mulobezi Game Management Area in Zambia.

Figure 5: SAGE scores by governance principle

As elaborated in the CBD decision of COP14, equity in conservation is understood to be largely a matter of governance with three dimensions – recognition, procedure and distribution (see figure 6). As shown in table 3, each of these three dimensions correspond to certain principles of equitable governance. This enables us to produce a radar diagram of SAGE scores by equity principles, in this case showing the common pattern of equity in distribution of benefits and costs being more than in procedure which in turn is more than in recognition.

Figure 6: SAGE scores by equity dimension
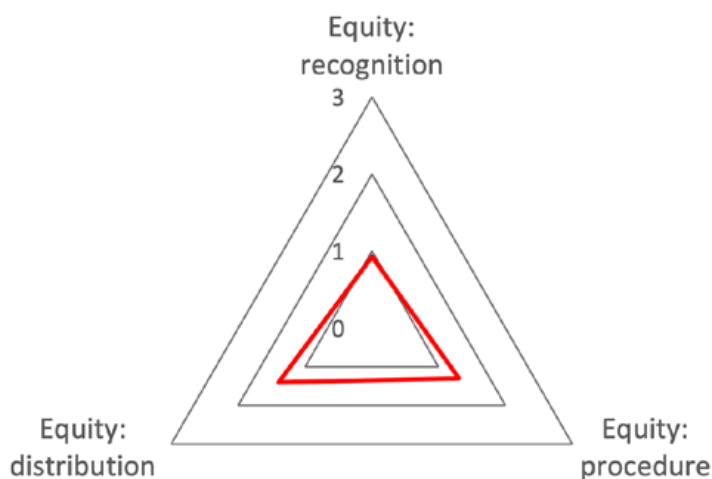
For more on the SAGE tool see:
https://www.iied.org/site-level-assessment-governance-equity-sage

7.1. MOVING FORWARD

In METT 4, we have addressed most of the needs identified in the first version of this handbook; adding additional questions, clearer wording, a dedicated website and more attention to assessing outcomes. The world is continuously changing; efforts to track progress in protected areas must be aware of and reflect changes that influence management. Experience also shows that further advice and capacity building could help improve the overall performance of the METT. The following are some suggestions for improving both the content and application of the METT. Several other innovations are still needed:

Capacity building material: Practical experience with the METT has shown that additional tools can be helpful, such as PowerPoint presentations that can be projected and filled in through discussion and consensus where multiple stakeholders are involved. Making these materials more generally available, and in a wider range of languages, could help others in making the best use of the assessment. Spending time training assessors, so that they fully understand the METT, will also help to ensure better results. One efficient way of doing this is to have future assessors take part in a METT assessment conducted by someone with experience.

Data control: A measure of quality control is needed when METTs are completed, particularly when implemented as part of an NGO, donor or government led project. It is clear that many METTs are not being completed accurately. The better the process to implement the METT (see section 4.2) the more accurate large datasets will be and the insights they can give to PAME will be improved, particularly when these data are being used in global studies.

Data availability: Ensuring the METT results are where possible made available through UNEP WCMC will provide an invaluable resource for researchers worldwide on management effectiveness of protected and conserved areas.

Linkages between tools: In this version of the Handbook we have introduced the concept of using SMART to provide data for METT and SAGE as a complementary tool with a focus on governance and equity. We have also highlighted the links between METT and standards such as IUCN's Green list. The more we highlight these links and introduce staff from protected and conserved areas of these tools in a unified manner, the more useful and effective the toolbox for conservation will become.

8. A SHORT HISTORY OF THE METT

This final section provides a history of the development and use of the METT. Section 8. 1 outlines the METT's origins and evolution and section 8.2 provides details of a range of reports of the METT's implementation from individual countries to portfolios of protected areas. The METT has also been adapted and used as the basis for a range of similar assessment tools, as shown in 8.3. Finally, section 8.4 provides a list of countries which have undertaken the METT as recorded on the METT database, including those countries which have undertaken repeat assessments

Photo: Thimpu River, Bhutan

Protected area managers have always been aware that they need to assess the results of their management activities and judge whether they are achieving their objectives. Until the late twentieth century there was little guidance available on how to do this. At the IVth IUCN World Parks Congress in Caracas in 1992 the protected area community recommended that IUCN develop a system for assessing protected area management effectiveness (PAME). In response, IUCN created an international Task Force with broad regional representation within its World Commission on Protected Areas (WCPA). After research, field testing and consultation, in 2000 the Task Force published *Evaluating Effectiveness: A Framework for Assessing Management of Protected Areas* (Hockings et al., 2000). Rather than suggesting one PAME system, the WCPA Framework provided guidance to protected area specialists on both the structure of and process for developing an evaluation, together with a checklist of issues that need to be measured. It also includes guidance on indicators that should be considered in an evaluation and encouraged basic standards for assessment and reporting.

The WCPA Framework is made up of a range of elements and processes that can usefully form the basis of any PAME system. It is based on the idea that an evaluation should reflect three main assessment themes:

1. protected area/s design and planning issues;

2. adequacy and appropriateness of management systems and processes; and

3. delivery of protected area objectives including conservation of values.

From these three themes the WCPA Framework identifies six key elements of protected area management, which together provide the basis of a PAME assessment (see Figure 1). These six elements reflect the way protected areas are established and managed, i.e., the management cycle.

The WCPA Framework suggests that systems for PAME should include all six elements as they are complementary rather than alternative approaches to assessing management effectiveness. Thus, the assessment needs to be made in the **context** of the protected area, so assessments first need to gather data on issues relating to the area's values, threats and opportunities, stakeholders, and the management and political context. Management starts with **planning** of strategies needed to fulfil the vision, goals and objectives of protection and to reduce threats. To put these plans in place and meet management objectives, managers need **inputs** (resources) of staff, money and equipment. Management activities are implemented according to accepted **processes** (i.e., best practices); which produce **outputs** by completing activities outlined in work plans. The end result of management is the achievement of **outcomes**, i.e., reaching the goals and objectives set for the biological conservation, economic development, social sustainability or cultural heritage of the protected area.

8.1. INSPIRATION BEHIND THE METT

The World Bank/WWF Alliance for Forest Conservation and Sustainable Use ('the Alliance') was formed in April 1998, in response to the continued depletion of the world's forest biodiversity and of forest-based goods and services essential for sustainable development. As part of its programme of work the Alliance set a target relating to PAME: *50 million hectares of existing but highly threatened forest protected areas to be secured under effective management by the year 2005* (Dudley and Stolton. 1999). To evaluate progress towards this target, the Alliance sought to develop a site-level Tracking Tool to facilitate reporting on PAME within WWF and World Bank projects; the METT was developed from this concept of a PAME Tracking Tool.

In November 2000 the Alliance elected to trial the "Scoring system for process and output indicators", Appendix II of the *Evaluating Effectiveness: A Framework for Assessing Management of Protected Areas*[31]. This appendix was based on several years'

work carried out on Fraser Island World Heritage site, Australia (Hockings and Hobson, 2000). Although the "scorecard" only addressed the WCPA Framework categories of process and output, it was felt that its 10 basic questions offered a simple option for protected area managers to consider issues related to management effectiveness without performing additional research. It was also thought to be broad and inclusive enough to provide an adequate picture of the management status of a broad spectrum of protected areas, and thus help the Alliance measure progress towards its target. The scorecard was sent out to selected World Bank task managers who were requested to complete it for protected areas over 20,000 ha in size. This exercise resulted in field tests in over 2,000,000 ha of forested protected areas in 16 sites at India, Indonesia, Philippines, Romania and Vietnam.

Following the field testing phase the Alliance contracted the authors of the WCPA Framework to provide two outputs:

1. A review on how the scorecard can be improved, with guidance on its scope and limitations.

2. Recommendations on how the WCPA Framework can be developed to:

    a. Track progress on the Alliance's target

    b. Provide reliable information to field managers to enhance management of biodiversity.

The review of the scorecard in the pilot sites, highlighted issues related to the trade-off between the brevity of the 10-question scorecard and the greater detail which would provide more complete basis for both the assessment and adaptation of protected area management. WWF felt that the existing Appendix II scorecard did not go far enough in assessing site performance and proposed the development of a more detailed alternative, which was presented to the Alliance in 2002. However, World Bank staff argued strongly that the proposal was too time-consuming to be used by their project executants. A compromise was agreed whereby the format of the original scorecard was maintained with a few extra questions and a data section added to reflect other elements in the framework (Stolton et al, 2002b).

As a result, the publication *Reporting Progress on Management Effectiveness in Protected Areas. A simple site-level tracking tool developed for the World Bank and WWF* (Stolton et al, 2002a) was published; the tool which subsequently became known as the METT.

As the title implies, the primary aim of the METT is to supply consistent data about the progress of protected area management over time. The purposes of the tool are detailed in the introduction of the 2002 and 2007 publications (Stolton et al, 2002a), which states that the METT was developed as a response to eight requirements:

1. Capable of providing a harmonised reporting system for protected area assessment within both the World Bank and WWF

2. Suitable for replication

3. Able to supply consistent data to allow tracking of progress over time

4. Relatively quick and easy to complete by protected area staff

5. Capable of providing a "score" if required

6. Based around a system that provides four alternative text answers to each question, thereby strengthening the scoring system

7. Easily understood by non-specialists

8. Nested within existing reporting systems to avoid duplication of effort.

The METT is ideally an "entry tool" into the whole concept and practice of PAME. There are now a multitude of tools (both generic and those developed for specific protected area systems or categories) (Leverington et al., 2010b) and the revised WCPA PAME Framework (Hockings et al, 2006) provides detailed guidance on how to carry out PAME evaluation and reviews many of the tools available.

The wide uptake of the 2002 version of the METT (known as METT 1) and analysis of the results from implementation by WWF (e.g., Dudley et al., 2004 – see section 7.2) led to some suggestions for improvement. The 2005 version (known as METT 2) included a standardised list of threats based on an early iteration of the "unified classifications of threats" developed by the Conservation Measures Partnership (CMP) (Salafsky et al., 2008). From this, assessors were asked to choose the two most important threats facing the management of the protected area. A list of management activities was also included, again from which assessors were asked to choose the two most important; this later innovation was only included in this version of the METT (although has been used in other adaptations, e.g., in Bhutan).

WWF funded a more detailed review and revision of the METT in 2007 based on implementation experience, best practices and the need to reflect the growing interest and implementation of the METT beyond the original aims of the Alliance's protected forest targets. This version, known as METT 3, was published in 2007 (Stolton et al., 2007). The revisions in the 2007 version included:

- **Addition of a standardised threat assessment:** In the 2002 version of the METT respondents were simply asked to list threats, which meant that slight changes of wording made analysis difficult and that some important threats (e.g., invasive species, fire and human-wildlife conflict) were often not mentioned (Dudley et al., 2004 and 2007). The 2005 edition used the typology of threats developed by CMP, which helped to standardise responses (and re-categorised the 2004 data using this system) but restricted responses to two major threats. Drawing on both these experiences, the CMP list was modified and revised, and a more detailed assessment system was introduced, where all threats were assessed.

- **Scoring disclaimer:** The review of results between 2002 and 2006 found that the concerns about using the METT to calculate an overall PAME score were slightly allayed and although a note remained in subsequent versions of the METT concerning the development of an overall score due to the lack of weighting of questions (see box 5 for further discussion of scoring), the disclaimer against scoring was removed. This was due to results showing that most individual questions correlated fairly highly with the total score, the exceptions being those relating to legal status, protected area design, local communities and indigenous people. This meant that the total score apparently correlated reasonably well with most individual scores and thus could serve as a reasonably good indicator of overall management effectiveness (Dudley et al., 2004 and 2007). However, as noted before, in the METT guidance reporting scores for individual elements of the WCPA Framework is likely to provide a much better indication of effectiveness than an overall score. This view was supported in a paper by Nolte and Agrawal (2012) where although composite METT scores were not significantly related to the effectiveness of protected areas in reducing fire occurrence – which was used as a proxy for effectiveness – several individual indicators in the METT were related. These indicators included cooperation with neighbouring official and commercial land; research activities; and access control, all of which would seem to have a direct impact on fire. They suggest that links between METT scores and outcomes may be stronger than the researchers of the paper suggest, but this depends on the other indicators chosen to indicate effectiveness.

- **Explanation:** A seemingly very simple revision was the change of the column heading of "comments" to "comments/explanation" in the first of two narrative columns in the multiple-choice element of the METT. This change was however the first step toward the type of evidence-based verification approach currently being developed in protected area management standards such as Conservation Assured | Tiger Standards and the Green List of Protected and Conserved Areas (see sections 5.2 and 5.3). As the guidance notes to the METT explain, this box "*allows for qualitative judgements to be explained in more detail. This could range from local staff knowledge (in many cases, staff knowledge will be the most informed and reliable source of knowledge), a reference document, monitoring results or external studies and assessments – the point being to give anyone reading the report an idea of why the assessment was made*".

- **Wider focus:** The revision made the METT less narrowly orientated towards forest protected areas and thus suitable for use in all protected areas including wetlands and marine. This wider focus also allowed for the tool to be used beyond government protected areas, for example, in village forest reserves in Tanzania (Malugu et al., 2008; Knights et al., 2014).

> **Box 6: The METT score**
>
> Guidance on the METT use has always noted that overall scores obtained from the tool should be treated with caution as the scoring system is not weighted, and clearly some questions are more crucial to the effectiveness of a protected area than others. Other concerns about scoring included:
>
> - That the assessment be seen by protected area staff as a judgement rather than a management tool
>
> - Recognition of the difficulty in comparing between protected areas when reporting is done by different people (who may have very different attitudes to and responses toward self-assessment for instance) and from different protected area management types, countries, governance, area etc where perceptions of the baseline of success and failure may be very different.
>
> Thus, the ability for data from simple PAME systems like the METT, which focus on the practice of management, to indicate or correlate with overall biodiversity outcomes is limited (Carranza et al., 2014) and using the overall METT score to infer conservation outcomes is likely misleading, considering only one of the questions actually address conservation outcomes (Zimsky et al., 2010). Ideally, only where the METT is used as part of a fully planned PAME implementation system and has been explained, adapted and results verified (see section 3.2), should the results be used to infer conservation outcomes.

8.2. EXAMPLES OF STUDIES USING METT RESULTS

Many projects have written up the results of METT implementation. These reports have been used throughout this report and provide a rich vein of information for those planning to use or study the METT. A sample of these reports is provided in table 4.

Table 4: METT reports

Organisation/ country	Comments	Source (in date order)
WWF	The first comprehensive analysis of METT results in 200 forest protected areas in 37 countries (see section 7.2).	Dudley et al., 2004
WCS	Assessment of 10 protected areas in the Eastern Steppe of Mongolia in 2004.	Heffernan et al, 2005
WWF	Second assessment in 331 protected areas in 51 countries, including 79 repeat assessments (see section 7.2 for details).	Dudley et al., 2007
Zambia	Report of use in 19 National Parks.	Mwima, 2007
IUCN Programme on African Protected Areas and Conservation (PAPACO)	A multi-year PAME implementation including METTs in: Bissau Guinea (1); Burkina Faso (1); Burundi (7); Cameroon (8); Central African Republic (2); Chad (2); DRC (19); Equatorial Guinea (1); Gabon (3); Ghana (5); Guinea (10); Mali (1); Mauritania (2); Niger (6); Republic of Congo (10); Togo (2).	2007 – 2011 (see: papaco. org/286-2/)
China	Assessment of 535 nature reserves.	Quan et al., 2009
Armenia	Used in Forest Sanctuaries as part of the improving Forest Law Enforcement and Governance in the European Neighbourhood Policy East Countries and Russia – ENPI FLEG Program.	Gevorgyan and Abovyan, 2010
WWF	Assessment as part of the Rwenzori Mountains Conservation and Environmental Management Project (RMCEMP).	Johns, 2012
GEF	Fifth Overall Performance Study (OPS-5) reviewed 1,865 protected areas across 251 projects, of which 1,209 (65%) submitted METT assessments.	Swartzendruber, 2013
Philippines	Used in 7 marine protected areas.	Dizon et al., 2013
ASEAN Heritage Parks (AHPs)	Used in 17 AHPs.	Inciong et al., 2013
Birdlife	Assessment 397 forest sites within the Eastern Arc Mountains and Coastal Forests (EACF) between 2004 and 2012.	Gereau, et al., 2014
Kenya, Tanzania and Mozambique	Analysis of 473 sites which had used the METT in this region coastal areas of Kenya, Tanzania and Mozambique.	Knights et al., 2014 (see also Burgess et al., 2015)
Bhutan	Use in all protected areas which cover just over 50% of the country.	Wildlife Conservation Division and Equilibrium Research, 2015 and 2016
Indonesia	The METT has been adopted as the national assessment system for protected areas and is being widely applied. Training is being given to managers and a national target has been adopted to lift 250 protected areas to effective management (i.e. with a score of at least 70%) by 2020. The METT has been translated into Indonesian and extensive guidance on application and scoring has been provided.	Kementerian Lingkungan Hidup dan Kehutanan, 2015
GEF	Review of GEF use in nearly 2,000 protected areas including field visits to 47 sites.	GEF, 2015

8.3. METT ADAPTATIONS

Many governments and organisations have adapted the METT for their own use. Again these adaptations can provide inspiration and insights for future implementations of the tool.

Table 5: METT adaptations

Organisation/ country	Comments	Source
GEF	The GEF has developed several version of the METT for tracking its biodiversity investments (see box 1).	
Critical Ecosystem Partnership Fund (CEPF)	Based on the structure of the METT, the CEPF tracking tool aims to monitor civil society organisations' capacity to effectively plan, implement and evaluate actions for biodiversity conservation.	
Carpathian Countries Protected Areas Management Effectiveness Tracking Tool (CCPAMETT)	The CCPAMETT was an online tool developed to be used on an annual basis. The tool was an output of the Protected Areas for a Living Planet Project carried out by WWF Danube-Carpathian Programme together with partners from the regional and local level and supported by the Swiss MAVA Foundation (2007-2011). Versions were available in English, Czech, Hungarian, Polish, Romanian, Serbian, Slovakian, Ukrainian.	Hockings et al., 2015
METT – South Africa (METT-SA)	The METT was adapted for use in 230 protected areas in South Africa. The questions relating to the indicators have been rephrased to better reflect South African circumstances and legislation.	
NAMETT	The METT adapted for use in Namibia was implemented in 20 protected areas in 2004, 2009 and 2011.	MET, 2014
WB/WWF Biofuels Environmental Sustainability Scorecard	Developed to provide an indication of whether a proposed biofuel project is likely to have a (net) positive or negative impact on the environment. There is no evidence that the tool has been used.	World Bank/World Wildlife Fund, 2008; McLaughlin, 2008; Ismail, et al. 2011
Ramsar Site Management Effectiveness Tracking Tool (R-METT)	Resolution XII.15 of the 12th Conference of Parties (COP12) to the Ramsar Convention formally approved the R-METT for evaluating and ensuring the effective management and conservation of Ramsar Sites.	Ramsar, 2014
Indian MEETR	The National Tiger Conservation Authority (NTCA), a statutory body under the Indian Ministry of Environment, Forests and Climate Change, and the Wildlife Institute of India have been carrying out assessment of Tiger Reserves in India since 2006. From 2011 an assessment system which shares many elements with the METT has been used.	Mathur et al., 2014
Bhutan METT +	The basic METT with additional guidance and questions including a more detailed threat assessment. Used in all protected areas in Bhutan in 2015 and 2016.	Dudley et al., 2016 and Lham et al., 2019
Conservation International (CI) CI-METT	A slight adaptation of WWF's original METT, prepared by CI staff in charge of developing a site-monitoring methodology within the organization's Monitoring Outcomes framework.	Pauquet, 2005
Arabian Peninsula	An adaptation was used in 7 protected areas in the peninsula.	Anon, 2009
Score Card to Assess Progress in Achieving Management Effectiveness Goals for Marine Protected Areas	Multiple use, for example in 172 MPAs in the Persian or Arabian Gulf, the Gulf of Oman and the south eastern coasts of Oman located in the Arabian Sea (Van Lavieren and Klaus, 2013).	Staub and Hatziolos, 2004
Self-assessment checklist for building networks of MPAs	A version adapted for use on marine protected areas.	Day and Laffoley, 2006

Organisation/ country	Comments	Source
Scorecard for management capacity and effectiveness assessment for forest reserves in China	A Chinese version of the METT.	Authors have version but current status unclear
Reflective Co-assessment Scorecard	An adaptation which focuses on cooperative behaviour as an essential precondition for effective management and that encourages reflective co-assessment of cooperative relationships	Roux et al. 2011.
ASEAN Heritage Parks	An adaption for Asia, which included additional output indicators related to the success of the protected area in reducing or combating illegal activities and success in providing ecosystem services. A selection of protected areas were visited as part of a verification process. The scoring system was also adapted.	Inciong et al., 2013
Enhanced METT	Used in 61 protected areas in the Philippines. The enhanced METT focussed primarily on process, introducing key informant interviews, focus group discussions, validation meetings, and feedback discussions with local stakeholders, summary and analyses by regional cluster groups followed by validation and consultation with the Department of Environment and Natural Resources, local government units, and civil society organizations	Guiang and Braganza, 2014
Papua New Guinea (PNG METT)	An adaptation to suit PNG (see case study).	Leverington et al., 2016 and 2017. A new adaption of METT 4 for PNG is being prepared
METTPAZ: Management Effectiveness Tracking Tool for Protected Areas managed by the Zambia Wildlife Authority	Adaptations include a score for the threat assessment. The results of the assessments using the METTPAZ were studied by the GEF to assess whether improved METT scores correlated with improvements in biodiversity outcomes (Zimsky et al., 2010).	Mwima, 2007

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WEB LINKS

For people using a printed version without direct links embedded, the following directs you to websites referred to in the manual.

1   https://www.protectedplanet.net/en/thematic-areas/protected-areas-management-effectiveness-pame

2   https://www.protectedplanet.net/en/thematic-areas/protected-areas-management-effectiveness-pame?tab=Results

3   https://www.facebook.com/groups/1578283049031666

4   https://papaco.org/286-2/

5   https://www.lestari-indonesia.org/en/usaid-lestari-program-launch-in-aceh/

6   https://www.protectedplanet.net/en/thematic-areas/protected-areas-management-effectiveness-pame?tab=Results

7   https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-31-en.pdf

8   https://www.protectedplanet.net/en/thematic-areas/protected-areas-management-effectiveness-pame?tab=Results

9   https://portals.iucn.org/library/sites/library/files/documents/PATRS-003-En.pdf

10   https://www.protectedplanet.net/en/thematic-areas/oecms?tab=OECMs

11   https://www.protectedplanet.net/en

12   https://www.protectedplanet.net/en

13   https://portals.iucn.org/library/sites/library/files/documents/PAG-021.pdf

14   http://whc.unesco.org/en/list

15   https://rsis.ramsar.org/

16   http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/world-network-wnbr/wnbr/

17   https://environment.asean.org/statements-and-declarations-2001-2010/asean-declaration-on-heritage-parks/

18   https://www.unep.org/cep/what-we-do/specially-protected-areas-and-wildlife-spaw

19   http://www.keybiodiversityareas.org/

20   http://datazone.birdlife.org/site/ibacriteria

21   http://datazone.birdlife.org/userfiles/images/Guidelines%20for%20the%20application%20of%20the%20IBA%20criteria_final%20approved%20version_July2020.pdf

22   https://zeroextinction.org/

23   https://zeroextinction.org/site-identification/aze-site-criteria/

24   https://www.cbd.int/doc/meetings/mar/ebsaws-2014-01/other/ebsaws-2014-01-azores-brochure-en.pdf

25   http://www.plantlifeipa.org/home

26   http://www.plantlifeipa.org/criteria

27   https://cmp-openstandards.org/library-item/threats-and-actions-taxonomies/

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