2018
United Nations List of Protected Areas

Supplement on protected area management effectiveness

UN environment · Convention on Biological Diversity · IUCN · WCPA WORLD COMMISSION ON PROTECTED AREAS · UN environment · WCMC

The UN Environment World Conservation Monitoring Centre (UNEP-WCMC) is the specialist biodiversity Centre of UN Environment, the world's foremost intergovernmental environmental organisation. The Centre has been in operation for almost 40 years, combining scientific research with practical policy advice.

UN Environment promotes environmentally sound practices globally and in its own activities. Our distribution policy aims to reduce UN Environment's carbon footprint.

CONTRIBUTORS

i

ACKNOWLEDGEMENTS

ii

Supported by:

Ympäristöministeriö
Miljöministeriet
Ministry of the Environment

proteus

In collaboration and with support from:

Convention on Biological Diversity

IUCN

WCPA
WORLD COMMISSION ON PROTECTED AREAS

국립공원관리공단
KOREA NATIONAL PARK SERVICE

ICCN
INSTITUT CONGOLAIS POUR LA CONSERVATION DE LA NATURE

WWF

한국보호지역포럼
Korea Protected Areas Forum

PARQUES NACIONALES NATURALES

WWF
COLOMBIA

Contents

List of figures

iv

List of tables

List of boxes

Acronyms and abbreviations

ABNJ: Area beyond National Jurisdiction

ACP: Asian Caribbean and Pacific

BIOPAMA: Biodiversity and Protected Areas Management

BMZ: Federal Ministry of Economic Cooperation and Development (Germany)

BSB: Binational Sena Oura

CBD: Convention on Biological Diversity

COMIFAC: Central African Forests Commission

COMIT: Coach Observatory Mission Information Toolkit

DG-DEVCO: Direction-General for International Cooperation and Development

ECOSOC: United Nations Economic and Social Council

EDF: European Development Fund

EoH: Enhancing our Heritage

GBO: Global Biodiversity Outlook

GD-PAME: Global Database on Protected Area Management Effectiveness

GEF: Global Environment Facility

GEO: Global Environment Outlook

ICCN: Congolese Institute for the Conservation of Nature

IMET: Integrated Management Effectiveness Tool

IUCN: International Union for Conservation of Nature

JRC: Joint Research Centre

METT: Management Effectiveness Tracking Tool

MPA: Marine protected area

MPA MEE: Marine Protected Area Management Effectiveness Evaluation

NGO: Non-governmental organization

OECM: Other effective area-based conservation measure

OFAC: Central African Forests Observatory

PACO: Central and West Africa Programme

PoWPA: Programme of Work on Protected Areas

RAPAC: Network of Protected Areas of Central Africa

RAPPAM: Rapid Assessment Prioritization of Protected Area Management

SBSTTA: Subsidiary body on Scientific, Technical and Technological Advice

SDG: Sustainable Development Goals

SOP: State of the Park

TNC: The Nature Conservancy

UN Environment: United Nations Environment

UNEP-WCMC: UN Environment World Conservation Monitoring Centre

WCPA: World Commission on Protected Areas

WDPA: World Database on Protected Areas

WWF: World Wide Fund for Nature

Foreword

Successive editions of the United Nations List of Protected Areas have provided an inventory of the world's protected natural places. Over the sixty years since its compilation was first mandated by the United Nations, the UN List has documented the continuous expansion of the global protected area network; an expansion that reflects a growing political commitment across the world's nations to conserve the Earth's natural habitats and biodiversity.

This commitment is showcased in the many new protected areas documented in this edition, designated to protect nature and provide ecosystem services, such as clean water, to people. These protected areas now number in the hundreds of thousands, and cover an ever increasing percentage of the planet's surface. In the oceans, this increase has been particularly noticeable in recent years; increasingly vast marine protected areas are being designated, the largest of which covers an area larger than Mexico.

While expanding the area under protection is vital, ever more significance is being assigned to understanding the impacts of management actions in protected areas, and to ensuring that protected areas are effectively managed to achieve the objectives they were created for.

The 2018 UN List provides up-to-date information on marine and terrestrial protected areas globally, and identifies those protected areas that have been the subject of management effectiveness evaluations. Such evaluations provide a valuable assessment of the management performance of these areas: they help identify threats to the protected areas and inform mitigating actions; they help in identifying gaps in capacity, for example insufficient technical or financial resources; and they can identify where management actions are successful at achieving conservation outcomes and thus should be maintained.

The current UN-mandated Strategic Plan for Biodiversity is coming to an end in two years, concluding the UN decade for biodiversity. As the world moves towards a new agenda for nature and people after 2020, it will be important that protected area management effectiveness is assessed more widely. The knowledge provided will support the world in building a protected area network that is not just extensive, but also effective in conserving nature and providing for people's needs.

Eric Solheim
Executive director,
UN Environment

Cristiana Paşca Palmer
Executive Secretary,
CBD

Inger Andersen
Director General,
IUCN

Neville Ash
Director, UNEP-WCMC

Kathy MacKinnon
Chair, IUCN-WCPA

Executive summary

The United Nations List of Protected Areas periodically reviews the global protected area estate and highlights progress achieved by countries in expanding their national protected area networks.

The 2018 edition of the UN List is the fifteenth release since the publication of the first version in 1961 – 62, and is a review of progress since 2014. It shows that the protected area estate worldwide has continued to expand since 2014, both on land and in the marine environment. In fact, the area protected in the marine environment has nearly doubled since 2014. This is partly due to the designation of some very large marine protected areas in many regions.

While increases in coverage are an important indicator of the determination of governments to meet Aichi Target 11, covering greater areas will not alone halt the loss of biodiversity. **For this reason, this report has a particular focus on the management effectiveness of the world's protected areas. This is the first time that the UN List has included this aspect as a focus for analysis.**

The importance of understanding the effectiveness of protected areas has been part of the international discussions on protected areas for over 30 years. Today, a large number of countries undertake management effectiveness evaluations of their protected areas on a systematic basis. However, the compilation of updated management effectiveness information for the publication of this edition of the UN List revealed that this concept is still unknown in many countries and that little information and guidance on the use of the different tools to assess management effectiveness is available.

Over 230,000 protected areas are currently documented in the World Database on Protected Areas; and information on management effectiveness is available for just under 1% of them. Considerable further efforts are therefore required to understand how effectively protected areas are managed and to promote the uptake of the different management effectiveness assessment tools that have been created. In addition, work is required to determine how effective protected area management translates into the delivery of positive outcomes for nature and people.

Résumé exécutif

La liste des Nations Unies des aires protégées examine régulièrement le parc des aires protégées et met en évidence les progrès accomplis par les pays en matière d'extension de leurs réseaux nationaux d'aires protégées.

L'édition 2018 de la liste des Nations Unies est la quinzième parution depuis la publication de la première version en 1961 – 62, et examine les progrès depuis 2014. Elle montre que le parc mondial des aires protégées a continué de s'étendre depuis 2014, à la fois sur terre et en milieu marin. En fait, la superficie de l'environnement marin protégée a presque doublé depuis 2014. Cette augmentation est en partie due à la désignation de certaines aires marines protégées très grandes dans plusieurs régions.

Bien que les augmentations de la couverture soient un indicateur important de la détermination des gouvernements à atteindre l'objectif 11 d'Aichi, couvrir de plus grandes surfaces ne suffira pas à arrêter la perte de la biodiversité. **C'est pourquoi ce rapport porte une attention particulière à l'efficacité de la gestion des aires protégées du monde. C'est la première fois que la liste des Nations Unies prend spécifiquement en compte cet aspect pour l'analyse.**

L'importance de la compréhension de l'efficacité des aires protégées a fait partie des discussions internationales sur les aires protégées pendant plus de 30 ans. Aujourd'hui, un grand nombre de pays procèdent à des évaluations de leurs aires protégées de façon systématique. Toutefois, la compilation des informations relatives à l'efficacité de la gestion mises à jour pour la publication de cette édition de la liste des Nations Unies a révélé que ce concept est encore inconnu dans de nombreux pays et que peu d'informations et d'instructions concernant l'utilisation des différents outils destinés à évaluer l'efficacité de la gestion sont disponibles.

Plus de 230 000 aires protégées sont actuellement documentées dans la Base de données mondiale sur les aires protégées ; et des informations relatives à l'efficacité de la gestion sont disponibles pour un peu moins de 1 % d'entre elles. Des efforts importants restent donc à fournir pour comprendre l'efficacité avec laquelle les aires protégées sont gérées et pour promouvoir l'adoption des différents outils d'évaluation de l'efficacité de la gestion qui ont été créés. En outre, davantage d'efforts sont également requis pour déterminer en quoi une gestion efficace des aires protégées se traduit par la réalisation des objectifs de conservation pour la nature et les populations.

Resumen ejecutivo

La Lista de Áreas Protegidas de las Naciones Unidas revisa de manera periódica el estado de la red de áreas protegidas a nivel mundial y destaca los avances logrados por los países en la expansión de sus redes nacionales.

La edición de 2018 de la Lista de Áreas Protegidas de la ONU representa la decimoquinta edición desde la publicación de la primera versión en 1961-62, y es una revisión del progreso realizado desde 2014. La presenta edición muestra cómo la superficie total de áreas protegidas ha seguido expandiéndose desde 2014, tanto en el medio terrestre como el marino. La expansión de la superficie total de las áreas marinas protegidas es especialmente destacable, llegándose casi a duplicar desde 2014. Esto se debe en parte a la designación de algunas áreas protegidas marinas muy grandes en muchas regiones.

Si bien los aumentos de cobertura son indicadores importantes del compromiso de los gobiernos para con el cumplimento de la Meta 11 de Aichi, estos aumentos no detendrán por si solos la pérdida de biodiversidad. **Es por esta razón que este informe se centra especialmente en la eficacia de la gestión de las áreas protegidas del mundo, siendo ésta la primera vez que la Lista de la ONU incluye este aspecto como tema de análisis.**

La importancia de entender la efectividad de las áreas protegidas ha sido parte de las discusiones internacionales sobre áreas protegidas durante más de 30 años. Hoy en día, un gran número de países realizan evaluaciones sistemáticas de la eficacia de gestión de sus áreas protegidas. No obstante, la información recopilada para la publicación de la presente edición revela que este concepto es aún desconocido en muchos países. La disponibilidad de información y guías sobre el uso de las diferentes herramientas para la evaluación de la eficacia de gestión de áreas protegidas es aún limitada.

De las más de 230.000 áreas protegidas actualmente documentadas en la Base de Datos Mundial sobre Áreas Protegidas, solamente se dispone de información sobre eficacia de gestión para algo menos del 1%. Se requieren por tanto importantes esfuerzos adicionales para entender mejor cuan eficazmente estas áreas protegidas son gestionadas y promover la adopción de las diferentes herramientas disponibles para la evaluación de eficacia de gestión. También es necesario dedicar esfuerzos para determinar cómo la gestión efectiva de áreas protegidas se traduce en resultados positivos para la naturaleza y las personas.

4

ملخص تنفيذي

تتولى قائمة الأمم المتحدة لمناطق المحمية عملية مراجعة تقدم المناطق المحمية عالمياً وتسليط الضوء على ما أحرزته الدول في توسيع شبكة المناطق المحمية الوطنية لديها.

تعد نسخة العام 2018 الطبعة الخامسة عشر للقائمة منذ صدور العدد الأول منها في 62-1961، وهي تستعرض التطور منذ العام 2014. وتظهر القائمة استمرار هذا التطور منذ العام 2014 على المستويين البري والبحري، مع الإشارة إلى تضاعف مساحة البحرية منها بسبب إعلان بعض المناطق المحمية البحرية الكبيرة في مناطق عديدة.

وبينما تشكل الزيادة في التغطية مؤشراً هاماً بالنسبة لإصرار الحكومات على الوصول إلى الهدف الحادي عشر من أهداف أيشي (Aichi Target)، فإن ذلك لن يؤدي بصورة تلقائية إلى الحد من فقدان التنوع البيولوجي. ولهذا السبب يركز التقرير بشكل خاص على فعالية الإدارة في عالم المحميات الطبيعية. وتكون هذه المرة الأولى التي تتطرق اللائحة إلى ذلك.

ولقد بدأت المحادثات الدولية بتناول موضوع فعالية الإدارة منذ حوالي 30 عاماً. وفي يومنا هذا أخذت دولاً عديدة على عاتقها القيام بعمليات تقييم لفعالية الإدارة للمناطق المحمية لديها بصورة ممنهجة. لكن، وخلال جمع المعلومات عن تقييم فعالية الإدارة لإضافتها إلى هذا التقرير، تبين أن هذا المفهوم لا يزال مجهولاً في عدد كبير من البلدان، وبالتالي بالنسبة إلى المعلومات حولها وطرق استخدامها.

تتضمن قاعدة البيانات العالمية للمناطق المحمية حوالي 230000 منطقة، بينما المعلومات عن فعالية الإدارة شبه غير متوفرة ولا تتخطى 1%. ولذلك يترتب على القيمين بذل جهود كبيرة للاطلاع على كيفية إدارة المناطق المحمية، و كذلك التشجيع على تبني أدوات تقييم فعالية الإدارة المختلفة التي جرى تطويرها. كما وينبغي الربط بين عملية فعالية الإدارة وتقديم نتائج إيجابية للطبيعة وللناس.

Резюме

Список охраняемых природных территорий Организации Объединенных Наций периодически рассматривает глобальное состояние охраняемых природных территорий и подчеркивает прогресс, достигнутый странами в расширении их национальных сетей охраняемых природных территорий.

Издание списка ООН в 2018 году является пятнадцатым выпуском с момента публикации первой версии в 1961-62 годах и является обзором прогресса с 2014 года. Это показывает, что с 2014 года по-прежнему расширяется площадь охраняемых природных территорий, как на суше и в морской среде. Фактически, территория, охраняемая в морской среде, почти удвоилась с 2014 года. Отчасти это связано с обозначением некоторых очень крупных морских охраняемых районов во многих регионах.

Хотя увеличение охвата является важным показателем определения правительств для достижения Айтинской целевой задачи 11, охранение более обширных территорий не ограничится лишь прекращением утраты биоразнообразия. По этой причине в этом докладе особое внимание уделяется эффективности управления охраняемыми природными территориями. Впервые список ООН включил этот аспект в качестве фокуса для анализа.

Важность понимания эффективности охраняемых природных территорий уже более 30 лет является частью международных дискуссий по охраняемым природным территориям. Сегодня большое число стран проводят систематические оценки эффективности их охраняемых природных территорий. Однако при компиляции обновленной информации об эффективности управления для публикации этого издания Списка ООН показала, выяснилось, что эта концепция до сих пор неизвестна во многих странах и имеется небольшая информация и рекомендации по использованию различных инструментов для оценки эффективности управления.

Более 230 000 охраняемых природных территорий в настоящее время задокументированы в Всемирной базе данных по охраняемым природным территориям; информация об эффективности управления доступна только для 1% из них. Поэтому необходимы значительные дальнейшие усилия для понимания того, как эффективно управляются охраняемые природные территроии, и содействия внедрению различных инструментов оценки эффективности управления, которые были созданы. Кроме того, требуется работа по определению того, как эффективное управление охраняемыми природными территориями трансформируется в достижение положительных результатов для природы и для людей.

执行摘要

联合国保护区名录定期审查全球保护区，并特别展示各国在扩大其国家保护区网络方面取得的进展。

2018年版的联合国名录是自1961-1962年第一版出版以来的第15版。该版本对自2014年以来的进展进行回顾。回顾显示，全球海洋和陆地保护区的覆盖面积自2014年以来都持续增长。事实上，自2014年以来，海洋方面的保护区面积几乎翻了一倍。产生该进展的部分原因是由于许多地区划定了一些面积庞大的海洋保护区。

虽然覆盖面积的增加是显示政府实现爱知目标11的决心的重要指标，但仅仅是覆盖更多地区并不能达到阻止生物多样性丧失的目的。因此，本报告特别关注全球保护区的管理有效性。这也是联合国名录首次将此方面纳入分析重点。

在过去的30多年以来，对于保护区管理有效性理解的重要性往往被纳入保护区相关的国际讨论中。而今，许多国家系统地对其保护区进行管理有效性评估。然而，我们在汇编本版"联合国名录"的最新管理有效性信息的过程中，意识到许多国家仍然不知道这一概念，并且关于使用不同工具对管理有效性进行评估的信息和指导也很难获取。

目前，世界保护区数据库记录了230,000多个保护区；具有管理有效性信息的保护区数量仅占不到1%。因此，我们需要做出相当大的努力，以了解如何有效地管理保护区，并促进已被创建的不同管理有效性评估工具的使用。此外，还需要开展相关工作，将对保护区的有效管理转化为对自然和人类所产生的积极成果。

1. Introduction

The International Union for Conservation of Nature (IUCN) defines a protected area as '*a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values*' (Dudley 2008). This definition is compatible with the Convention on Biological Diversity (CBD) definition of a protected area (Lopoukhine and Ferreira de Souza Dias 2012), and together these definitions underpin the World Database on Protected Areas (WDPA). This database is the source from which much of the information in this report is derived.

The United Nations List of Protected Areas (hereafter referred to as 'the UN List') is a list of terrestrial, coastal and marine protected areas designated by governments around the world. Since its initial publication in 1961/62, successive editions of the UN List have documented the evolution and expansion of the global network of protected areas.

This new edition of the UN List provides an updated picture of the global protected area estate as it stands in July 2018. Progress achieved since 2014 in expanding the coverage of protected areas in the marine and terrestrial realms is reviewed, and for the first time information on the management effectiveness of these areas is included. This UN List, together with the Protected Planet Report 2018, provides the most comprehensive picture of the status and trends of the global protected area network worldwide. In particular, these two reports provide an indication of global progress towards the CBD's Aichi Target 11, which reads '*By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape*'.

In total, information on 238,563 protected areas, from 244 countries and territories, covering more than 46 million km^2 is presented in this report. These protected areas are distributed across 11 CBD regions: Africa, Asia, Caribbean, Central America, Europe, Middle East, North America, Oceania, South America, Southern Oceans and Areas Beyond National Jurisdiction. The regional categorization used here aligns with that used in the 2014 edition of the UN List, thus allowing for comparisons to be made.

The protected areas catalogued here are those that have been designated through legal or other effective means. This includes some areas that meet the IUCN definition of a protected area but are not formally recognised, but excludes proposed protected areas and those whose status is unknown. This excludes 2,071 protected areas in the WDPA. This is in no way a judgment on the importance or effectiveness of these areas in protecting biodiversity, ecosystem services, or associated values.

While the WDPA provides an increasingly complete record of where protected areas are located, there is less information available on the quality of the management of these areas towards achieving the objectives they were designated for. Understanding management effectiveness is fundamental to ensuring that protected areas remain effective tools for conservation in a world where anthropogenic pressures are increasingly threatening biodiversity and ecosystem services.

Management effectiveness of protected areas

Management effectiveness assessments investigate how well protected areas are being managed, and primarily the extent to which management is protecting values, such as biodiversity values and associated cultural values, and supporting the achievement of goals and objectives (Hocking et al. 2006).

At the global level, information on management effectiveness is stored in the Global Database on Protected Area Management Effectiveness (GD-PAME). This database only contains assessments for protected areas that are also documented in the WDPA. The history and background to the data base is found in Coad et al. (2015)

In preparation for the publication of this report, all CBD national focal points were contacted to review and update their management effectiveness data in the GD-PAME, and 20% of national governments have chosen to do so, covering almost 22,000 sites. These data have also been used in this report.

Objectives of the report

The principal objectives of the report are:

1. To present updated lists of protected areas for every country and territory, with associated information on management effectiveness.
2. To provide a review of some of the most commonly used methodologies applied to assess management effectiveness.
3. To provide statistics on protected areas at the national and regional levels and assess progress towards several elements of Aichi Target 11 at these levels.

2. History of the United Nations List of Protected Areas

The UN List has its origins in two Resolutions, 713 and 810 (adopted in 1959 and 1961 respectively) of the United Nations Economic and Social Council. These resolutions were endorsed at the Sixteenth Session of the General Assembly in 1962 through Resolution 1831 (see full text of resolutions in Annex 1). The request for the compilation of the UN List reflects the recognition of the importance of protected areas, at the time referred to as 'national parks and equivalent reserves' in the preservation of natural resources.

The first UN List, entitled the 'United Nations List of National Parks and Equivalent Reserves', was published in two parts in 1961/62, and was launched at the first World Conference on National Parks held in Seattle, USA in 1962. This meeting defined the basis, definitions and standards for building representative national systems of protected areas. The first part of the list (referred as E/3436) was a preliminary list of national parks and reserves in countries and territories that had submitted information by mid-December 1960. The second part (referred to as 'Part two') contained further submissions that were absent in the first part, in addition to some revisions and additions to part one of the UN List.

Subsequent editions of the UN List were published in 1966-71, 1972 (addendum to the 1966-71 edition), 1973, 1974, 1975, 1980, 1982, 1984, 1990, 1993, 1997, 2003, and 2014. The 1966/71, 1982, 2003 and 2014 editions were also launched at *World Parks* events. These events were, respectively, the Second World Conference on National Parks held in Yellowstone, USA; the Third World National Parks Congress held in Bali, Indonesia; the fifth World Parks Congress held in Durban, South Africa; and the sixth World Parks Congress held in Sydney, Australia. The 1993 UN List was the first to use the new IUCN management category system that had been approved just a year earlier during the 1992 World Congress on National Parks and Protected Areas, which was subsequently revised and updated in 2008. Similarly to the 2014 UN List of Protected Areas, the present edition is supplemented by an interactive website (www.protectedplanet.net).

Each edition of the UN List has been an opportunity for countries to re-assess, improve and enhance their protected area networks, and the information collated about them. As national protected area networks have expanded, and as more information has become available, successive editions of the UN List have become more substantial. The content and format of the publications have also evolved to reflect changes in the perception and practices surrounding national parks and other protected areas over the years.

3. The World Database on Protected Areas

The WDPA is the most comprehensive database on coastal, marine, and terrestrial protected areas designated at the national level, as well as under regional and international conventions and agreements. Increasingly, it also includes areas that meet the IUCN definition of a protected area but are not formally designated (such as areas conserved by indigenous peoples that have been established through customary law). The WDPA is a joint product of UN Environment and IUCN, and is managed by UNEP-WCMC.

The digital version of the database was established in 1981 and has been growing continuously since, drawing on regular updates of information from data providers. At present, there are over 500 data providers, ranging from governments to individuals. Due to their contributions, the database currently consists of more than 230,000 protected areas from 244 countries and territories (July 2018 version).

Sites currently included in the WDPA should comply with the IUCN definition of a protected area; and each protected area reported in the database is associated with a geographic location (represented either by a point record or a polygon (digitally mapped boundary)) and a series of descriptive attributes such as designation, IUCN management category, and IUCN governance type. The structure of the database undergoes occasional revision as its scope expands, enabling it to continue to meet the needs of governments, the conservation community, and other users. The WDPA will also in the future contain information on 'other effective area based conservation measures', a concept described in Aichi Target 11 and defined with guidance by the CBD SBSTTA (CBD/SBSTTA/REC/22/5).

The WDPA is updated on a monthly basis and can be viewed and downloaded on the Protected Planet website (www.protectedplanet.net). The database is used in a wide range of sectors from research to policy, and supports the international policy sector by tracking countries' and territories' progress towards implementing Aichi Target 11. It is also used in indicators relating to Sustainable Development Goals (SDGs) 14 and 15, and informs the Global Biodiversity Outlook (GBO) and Global Environment Outlook (GEO).

Since its inception, work on the WDPA has been focused on improving its quality. In particular, the increasing accuracy of protected area boundaries reported to the database, and increasing frequency of updates, enables more accurate analyses (Figure 1). In systematic conservation planning studies, for example, the prediction of the most suitable locations for protected area expansion relies on the quality of the input data.

The improvements in the WDPA are a reflection of increased efforts by countries to map with precision the location of their protected areas so that we now know, better than ever, where most protected areas are located with certainty and accuracy.
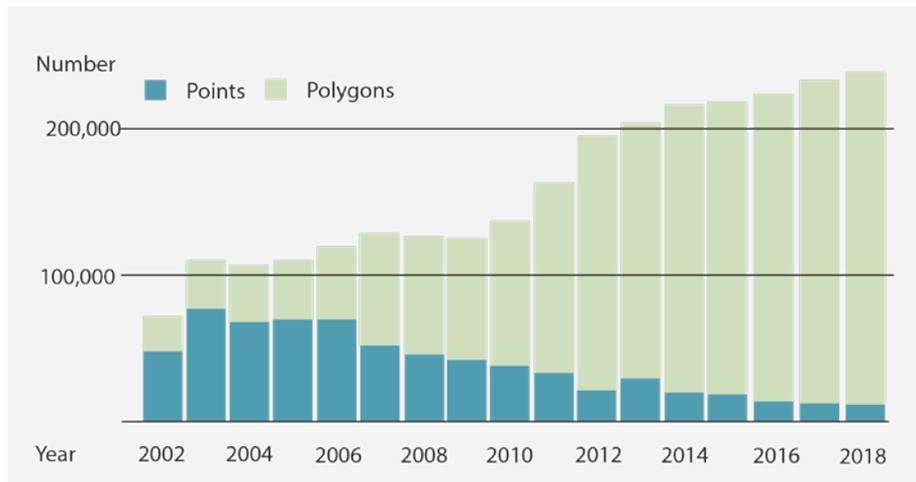
Figure 1: *Data improvements between 2002 and 2018 shown as an increase in the number of protected area records stored in the WDPA, based on the past annual versions of the WDPA since 2002 (Source: UNEP-WCMC, 2018)*

4. Protected Area Management Effectiveness

4.1 Background

Protected area management effectiveness is defined as 'the assessment of how well the protected area is being managed – primarily the extent to which it is protecting values and achieving goals and objectives. The term management effectiveness reflects three main themes: 1) design issues relating to both individual sites and protected area systems; 2) adequacy and appropriateness of management systems and processes; and 3) delivery of protected area objectives including conservation of values' (Hockings et al. 2006).

By creating an understanding of the strengths and weaknesses of protected area management, evaluations of management effectiveness can help inform adaptive management practices, support the wise allocation of resources, build community awareness, measure investment impacts, promote accountability and transparency, and enable accurate reporting against conservation targets (UNEP/CBD/SBSTTA/20/INF/45).

The importance of understanding the effectiveness of protected area management, and the development of adequate tools to evaluate this, have been part of international discussions on protected areas for over thirty years. The 1982 World Parks Congress recognised the need to develop adequate tools and guidelines to evaluate the ecological and managerial aspects of protected areas; and in 1992, at the fourth World Parks Congress, effective management was identified as one of the four major issues relating to protected areas. This reinforced the need to develop tools to better monitor management effectiveness of protected areas. Recently, the concept of protected area management effectiveness has gained greater visibility, in particular with the approaching end of the Convention of Biological Diversity's Strategic Plan and its Aichi Targets, and Aichi Target 11 in particular: the achievement of this target depends upon protected areas being effectively managed.

In 2000, an IUCN World Commission on Protected Areas (WCPA) framework was developed to guide the development of assessment systems for evaluating management effectiveness (Hockings et al. 2000; Hockings et al. 2006). This framework, which is widely recognized and still used today, identified six components, each associated with different aspects of management effectiveness: context, planning, inputs, process, outputs, and outcomes (Figure 2).

Figure 2: *The IUCN WCPA framework representing the six stages of protected area management (Hockings et al. 2006).*
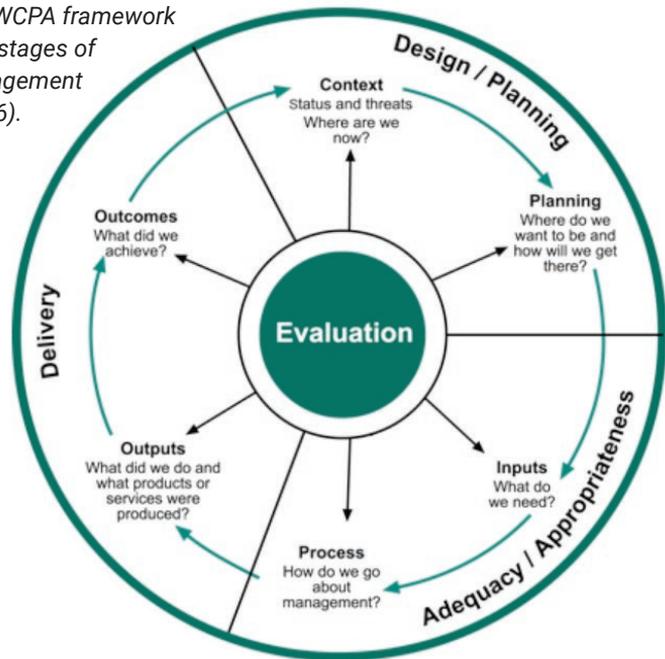
14

A large number of methodologies, ranging from detailed site-level studies to broad system-level assessments, are based around this framework. While methodologies differ in terms of scope, scale, and level of detail, those developed around the IUCN WCPA framework provide a comprehensive picture of management effectiveness and can be linked to one another through the framework. Such methodologies have been applied to evaluate the effectiveness of management actions in a diverse range of protected areas, including those designated at the national level (e.g. National Parks), and those designated under regional and international conventions and agreements (e.g. Ramsar Sites, Wetlands of International Importance). The methodologies applied at these different levels sometimes vary: the Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) tool and the Management Effectiveness Tracking Tool (METT) are two methodologies used to assess national-level designations, whereas the World Heritage Outlook is used to assess management effectiveness of protected areas designated under the World Heritage Convention and the Green List has been recently developed as a new standard tool for global use (IUCN and World Commission on Protected Areas 2017).

These various assessments have been collated at the global level into the Global Database on Protected Area Management (GD-PAME); the most comprehensive database on protected area management effectiveness. Created in 2006 as a research database at the University of Queensland under a programme jointly funded by WWF and The Nature Conservancy (TNC), it is now managed by UNEP-WCMC under the Protected Planet Initiative and as a joint project of the UN Environment and the International Union for Conservation of Nature (IUCN). The database indicates whether a protected area in the WDPA has been assessed, and whether the assessment is publicly available. The GD-PAME currently consists of over 28,000 assessments in almost 22,000 protected areas from 169 countries, and undertaken using over sixty different methodologies (July 2018).

BOX 4.1: USING PROTECTED AREA MANAGEMENT PERFORMANCE TOOLS IN THE DEMOCRATIC REPUBLIC OF CONGO

Ménard Mbende[1], Gaby Zabati[2]

1 World Wide Fund for Nature (WWF) Democratic Republic of Congo - mmbende@wwfdrc.org
2 Congolese Institute for the Conservation of Nature (ICCN) – gabyzabiti@yahoo.fr

Monitoring the management effectiveness of protected areas in the Democratic Republic of Congo (DRC) is done using the Integrated Management Effectiveness Tool (IMET). To facilitate this, several IMET coaches have been trained, and meet annually to review current practices in given protected areas against the six elements of the management cycle (context, planning, inputs, process, outputs, and outcomes). Each team is generally composed of three coaches who have been trained in IMET administration, and five to ten senior members of the management team of the protected area.

During the workshop, the team conducts a self-evaluation for each element, using clearly-defined indicators. Since internet access if often limited in DRC, the evaluations are conducted offline and are later uploaded. Total costs for each workshop are generally USD 15,000.

The Congolese Institute for the Conservation of Nature (ICCN) is the overarching institution responsible for protected areas in the DRC. The DRC has several protected area categories. Some of these do not yet align with IUCN management categories, but there are plans to increase alignment in the future. So far no criteria have been set against which the protected area categories can be evaluated, therefore other relevant documents, such as validated management plans, operational plans and/or business plans are consulted. These documents provide an indication of the performance standards for a given protected area.

BOX 4.1: USING PROTECTED AREA MANAGEMENT PERFORMANCE TOOLS IN THE DEMOCRATIC REPUBLIC OF CONGO (CONTINUED)

Beginning with an initial testing phase in 2015, ICCN has applied IMET in several protected areas including Kahuzi-Biega National Park, Salonga National Park, Virunga National Park, the Nature Reserve of the Ngiri Triangle and the Tumba Lediima Nature Reserve. After this test phase it was decided that IMET evaluations should be conducted whenever a protected areas has a management team and the relevant management documents mentioned above, and where funds are available to support the evaluations. IMET is now used annually to assess the performance for five protected areas within DRC (Kahuzi-Biega National Park, Salonga National Park, Ngiri Triangle Natural Reserve, Lomami National Park and Itombwe Natural Reserve). In the future, DRC plans to monitor management effectiveness using the IMET tool in all protected areas in the network that meet the minimum criteria listed earlier.
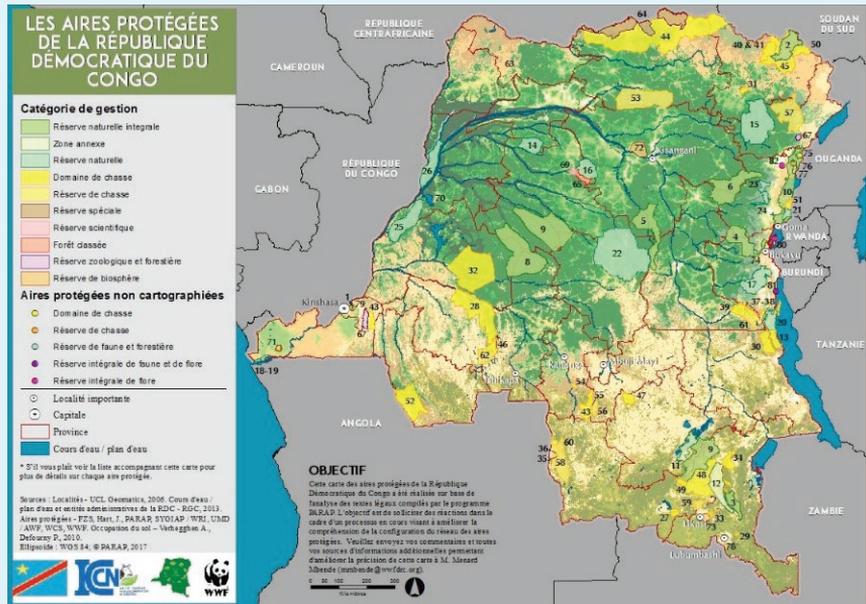
BOX 4.2: MANAGEMENT EFFECTIVENESS EVALUATION IN KOREA: STATE OF THE PARK

Korea National Park Service and Korea Protected Areas Forum

The Republic of Korea has completed its first protected areas management effectiveness evaluation in close cooperation with IUCN WCPA from 2008 to 2009. This was the first evaluation carried out at the governmental level in Asia. The second assessment was carried out from 2011 to 2012 and the third assessment was done from 2015 to 2016.

Korea State of the Park (SOP) is a management tool and an SOP report consists of five parts summarising the overall conditions of a protected areas and its management status. This includes natural and cultural resources, facilities, and visitor experiences, among other elements. The tool is intended to build information reflecting management experiences, provide a better understanding of the protected areas assessed, and respond to various management needs and management environment changes systematically.

The IUCN-WCPA's management effectiveness framework has been adapted and all the six management elements (context, planning, inputs, process, outputs and outcomes), are embedded into the SOP methodologies for promoting adaptive management.

For the evaluation, we are using the best available data and information, and promoting participation of staff and stakeholders to reflect experiences of park managers, experts and others including local community members. This means that the evaluation process becomes a part of management as well as a process of learning.

As of 2018, a total of 1,219 protected areas have been assessed for management effectiveness in Korea and 741 protected area results have been submitted to the GD-PAME. The assessments that have not been submitted relate to protected areas that have yet to be recorded in the WDPA.

The Ministry of Environment of Korea and Korea National Park Service applied the Korea SOP method to assess 742 protected areas and 707 results were submitted to GD-PAME including 22 national parks, 21 province parks, 23 county parks, 24 ecosystem and landscape conservation areas, 23 wetland protected areas, 245 special islands, 348 wildlife protected areas and 1 wildlife special protected area. 462 forest genetic resource reserves are assessed through METT methods by Korea Forest Service and 15 marine protected areas are assessed through MPA MEE by Korea Marine Environment Management Corporation.

BOX 4.2: MANAGEMENT EFFECTIVENESS EVALUATION IN KOREA: STATE OF THE PARK (CONTINUED)

Some of the benefits and outcomes of the SOP are:

- The evaluation process itself becomes learning process and improves staff knowledge about the protected area, and consequently enhances their management capacity,
- It creates a better overall understanding of a park including the values, current conditions, and threats,
- It provides information to protected area managers and decision makers for setting management priorities and decision making,
- We can better communicate with the public and thus promote greater awareness of protected areas and participation in conservation of protected areas.
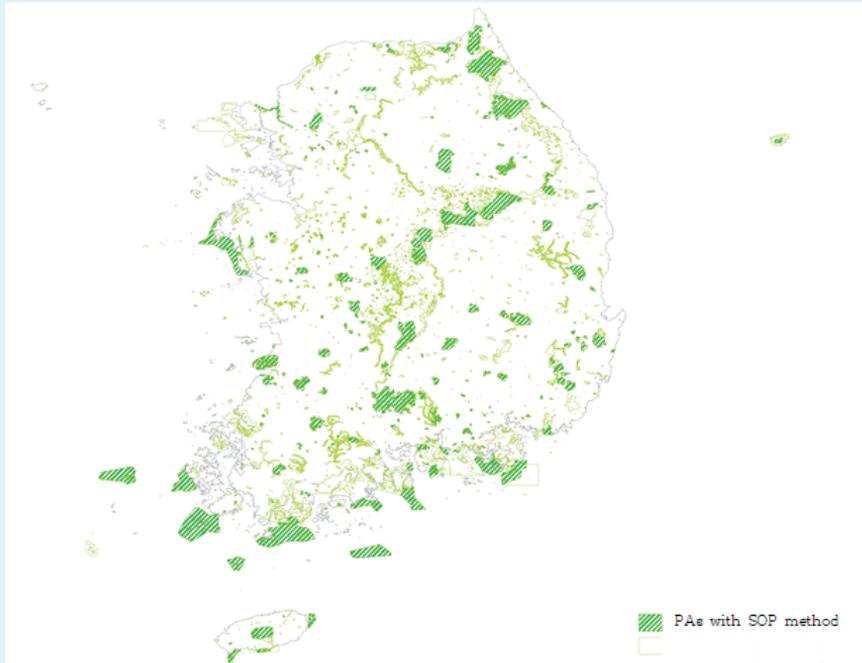
BOX 4.3: ANALYSES ON PROTECTED AREAS MANAGEMENT EFFECTIVENESS WITH SOCIAL PARTICIPATION IN COLOMBIA

Parques Nacionales Naturales de Colombia

What is the AEMAPPS?

The National Natural Park System (SPNN in Spanish) in partnership with WWF – Colombia, started in the year 2001 the creation of the methodology "Analyses on Protected Areas Management Effectiveness with Social Participation" (APAMESP, AEMAPPS in Spanish), following the conceptual framework proposed by IUCN which integrates the context, planning, inputs, processes, products and results of management.

The AEMAPPS is a methodology designed to support professionals, technicians and operators, and other social actors involved in the management of protected areas of National Natural Parks of Colombia (PNNC in Spanish), in the planning and execution processes in protected areas, and the verification of the fulfilment of management objectives, effects and desired impacts, focusing on social participation in conservation.

Application of AEMAPPS in Colombia

The formal application of the method began in 2008 in about 90% of the SPNN areas. There have been regular assessments since 2010 in all protected areas and one update since 2016. As part of this update, the management planning analysis included the perception of benefits, for which the PA-BAT methodology (protected areas benefits assessment tool or tool for the evaluation of benefits) was incorporated and adapted to the Colombian context). To date, this tool has been applied in the Guafrachu Node, Otún River Basin and in the areas belonging to the IUCN Green List of Protected and Conserved Areas, as well as possible candidates for the Green List. The results obtained under this methodology share characteristics with those generated by the Management Effectiveness Tracking Tool (METT), used to monitor projects financed by the Global Environment Facility (GEF).

BOX 4.3: ANALYSES ON PROTECTED AREAS MANAGEMENT EFFECTIVENESS WITH SOCIAL PARTICIPATION IN COLOMBIA (CONTINUED)

How have the results been used?

In Colombia, the evaluation of management effectiveness has been seen as a process that supports the achievement of conservation objectives through the strengthening of an effective system of protected areas. The identification and analysis of the strengths and weaknesses of the management has served to increase the understanding of the current state of the protected areas. This knowledge has been used to update the protected area planning tool, and administrators have included the results within the diagnostic component and strategic plan of action, meaning that some of the goals respond to these results.

In addition, the programs and projects in protected areas have prioritized their intervention actions and specific protected areas, based on the results of the effectiveness analysis. For example, the KfW project "Protected Areas and Biological Diversity of Colombia" builds its General Operative Plan and monitors its interventions based on the AEMAPPS. Likewise, as part of the analysis of the financial gap for the areas of this project, the personnel and resources required were identified based on the results obtained in the last seven years from the AEMAPPS.

Currently, Colombia is advancing the formulation of a financing program called "Herencia Colombia - HeCo", which seeks to protect and ensure the sustainable use of natural capital, and improve the quality and governance of the National System of Protected Areas through the integral commitment of the Government to contribute to a complete, efficiently managed, and representative system. Three goals have been set out to achieve this: 1) increase in natural wealth, 2) ensure effective management of protected areas and 3) carry out interventions at the landscape level. For the second goal, priority protected areas and actions were defined based on the results of the 2016 application cycle. These interventions are being costed and, in a term of 10 years, the SPNN areas are expected to see improvements in management and operation, contributing to the achievement of effective protected area management.

The results obtained on the state of the human resources have also been incorporated by the Human Management Group in the diagnosis of psycho-social risk and occupational health needs, as part of their welfare plan. Likewise, the technical study that supports and sustains the expansion of the staff number of National Park agency (Parques Nacionales), the National Civil Service Commission and the Ministry of Finance, includes as one of the inputs the results of the application of the exercise of labour burdens that was incorporated into the effectiveness tool in the 2011 period.

BOX 4.3: ANALYSES ON PROTECTED AREAS MANAGEMENT EFFECTIVENESS WITH SOCIAL PARTICIPATION IN COLOMBIA (CONTINUED)

Finally, as a complement to the site analysis and in collaboration with the World Commission on Protected Areas of IUCN and WWF, in 2010 a methodology was designed to analyse the coordination of the National System of Protected Areas. This methodology was designed in a participatory manner, and generated a series of recommendations to increase effectiveness under eight analysis topics, which have been incorporated into the management. These results have allowed social and institutional stakeholders to be informed about the impact of the strategies formulated jointly with them, as well as to prioritize support actions for the SPNN areas. This methodology is currently under review and will be applied with different actors of the National System of Protected Areas.

5. Review of selected protected area management effectiveness methodologies

5.1 The Management Effectiveness Tracking Tool (METT)

Following growing interest in protected area management effectiveness (PAME), in 1999 the World Bank/ World Wide Fund for Nature (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 progress towards the target, culminating in development of the Management Effectiveness Tracking Tool (METT), a simple, questionnaire-based approach to assessing PAME. The METT, and variations on it, has since become one of the most commonly applied PAME tools, used in over 2,042 protected areas covering over 1.3 million km^2 in at least 119 countries and territories.

The METT consists of two main sections: datasheets of key information on the protected area, including a threat assessment, and an assessment form. The assessment provides a composite measurement across thirty parameters of PAME. It is designed around a questionnaire that provides four alternative responses, each with an associated score ranging between 0 (poor) and 3 (excellent). Each question also has data fields inviting more detailed responses (with justification if possible) and steps to be taken to improve management where necessary.

The aim of the METT is to provide useful, measurable results which can lead to better management effectiveness, through a tool which is simple and cheap to implement. The METT is thus strongest at measuring the effectiveness of management and weaker at reflecting overall conservation results. It 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, aiming to identify those management processes critical to success.

During years of widespread use, the METT has been adapted, praised and criticised in equal measure. It has been used by many governments and nearly all major international NGOs working on conservation issues, as well as by conservation secretariats, major funders (most significantly the Global Environment Facility (GEF)), academics and researchers. Most of these applications and analyses go far beyond the initial purposes and aims of the METT. They have shown the utility of the tool and have also demonstrated weaknesses and gaps in the design, and particularly in the process by which the tool is used.

The evaluation process

Although the METT is intended to be simple and easy to implement, experience has shown that many users do not apply the METT as effectively as possible, in particular focusing 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 METT Handbook (Stolton and Dudley, 2016) was produced after an extensive review of METT implementation worldwide; the handbook aims to improve the efficacy with which the METT is applied. 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 assess the information available to complete it. Think about capacity and pre-assessment training needs, adaptation, timing, scope and scale, verification, and related issues.
2. *Allow enough time to complete the assessment in full*. A good METT cannot be done in an hour; most questions take serious thought. The first METT is likely to take at least a day, and probably two. Subsequent 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 actions which can be taken to improve management.
4. *Use quantitative data wherever available to support assessment*. Quantitative data is particularly important when answering the outcome questions.

Adapt and translate

5. *Adaptation is encouraged*. The METT is a generic tool designed for global use; thus it is unlikely to fit one protected area (or system, type etc.) perfectly.

Repeat the assessment

6. *The METT is designed to track progress over time*. Sites or networks planning to implement the METT should aim to repeat the assessments every few years; ideally the METT should be an automatic part of site planning.

Consult and get consensus

7. *The implementation of the METT should, wherever possible, include a wide range of rightsholders and stakeholders to aid insight when making the assessment*. Ideally this should include people living inside and outside the protected area, such as local communities, to bring richer insights to management effectiveness.

Build capacity and guidance

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

9. *Developing an understanding of the METT and how it can be implemented in a specific jurisdiction will help ensure valid results*. As a generic tool the METT questions can be interpreted differently in different situations or jurisdictions, thus reviewing the METT and developing guidance on implementation will help ensure its usefulness.

Verify results

10. *Verification processes can be useful*. Although designed as a self-assessment tool, METT implementation can involve verification processes; from simple checking of completed METTs by external assessors to more detailed field verification exercises involving data collection.

Implement recommendations

11. *Using and disseminating the results*. 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.

The IUCN management effectiveness framework

Although all six elements of the Framework are included, most of the questions relate to planning, inputs and process. The generic METT is too limited to allow a detailed evaluation of outcomes, however some adaptations (e.g. the version used by the GEF) include a more detailed focus on outcomes.

BOX 5.1: REVIEWING, ADAPTING AND IMPLEMENTING THE METT IN BHUTAN

An assessment of management effectiveness was carried out in the Kingdom of Bhutan between 2014 and 2016 in ten protected areas and one botanical park (together covering 16,443.5 km^2).

The Wildlife Conservation Division of the Department of Forest and Parks Services decided to use the METT as the basis of their assessment system, but with two important adaptations: (1) the inclusion of additional questions to create a more detailed assessment tool and (2) provision of guidance on the generic questions of the METT, to facilitate use by protected area staff in Bhutan. This aimed to ensure equivalence across the protected area network and consistency of approach in subsequent assessments. The Bhutan Management Effectiveness Tracking Tool Plus (Bhutan METT +) was developed primarily at a national training workshop in 2015, with representatives from the Wildlife Conservation Division, managers and staff from half the country's protected areas, and external consultants. Further modifications were suggested at a second national workshop, in 2016, which involved staff from all the protected areas.

Once the Bhutan METT + was completed for all protected areas field verification was carried out in three sites (Royal Manas, Wangchuck Centennial and Jigme Singye Wangchuck National Parks). This included interviews with local stakeholders conducted by external specialists. These assessments were refined by site staff and through review and validation by the Wildlife Conservation Division and consultants. More than 200 people were involved in the assessment, including all protected area staff, representatives of local communities, national government, and NGO staff involved in the management of protected areas.

The assessment indicated that protected areas in Bhutan are well managed and there are generally good relationships with local communities, despite an increase in livestock predation and crop damage. However, effectiveness is limited by a low level of resources (both financial and appropriate technical resources) and by gaps in monitoring and research data, which limits the ability to understand the impact of conservation, react to changing conditions and undertake adaptive management to improve efficiency and effectiveness. Bhutan is in the midst of mobilizing considerable conservation funding. The Government is working in partnership with WWF to create an innovative funding mechanism for the protected area system: the Bhutan for Life initiative. The Bhutan METT + provides the baseline, and action plan, to ensure this funding is targeting where most needed.

The Bhutan METT + is being mainstreamed into the protected area management system through issuance of an executive order from the government that assessments should be conducted every five years (Lham, et al, 2018).

5.2 The Integrated Management Effectiveness Tool (IMET)

The main purpose of the Integrated Management Effectiveness Tool (IMET) is to support comprehensive protected area planning, monitoring and evaluation with a view to improving PA management and ensure that PAs meet their conservation objectives. Although IMET assessments include the evaluation of PA management effectiveness, the scope of IMET is much broader than that of some of the other PAME methodologies. IMET supports a proactive results-based approach to adaptive PA management and provides a comprehensive decision support system for PA agencies and managers.

The IMET methodology has been developed in the context of the EU-funded Biodiversity and Protected Areas Management (BIOPAMA) Programme, which aims to improve the long-term conservation and sustainable use of natural resources in African, Caribbean and Pacific (ACP) countries, in protected areas and surrounding communities. BIOPAMA is an initiative of the ACP Group of States financed by the European Union's 10th and 11th European Development Fund (EDF), jointly implemented by IUCN and the Joint Research Centre of the European Commission (JRC). The development, testing and deployment of the IMET methodology was led by JRC and the Central African Forests Observatory (OFAC) under the auspices of the Central African Forests Commission (COMIFAC), in collaboration with the Network of Protected Areas of Central Africa (RAPAC), IUCN's Central and West Africa Programme (PACO) and other partners.

Building on PAME methodologies such as RAPPAM, METT and the Enhancing our Heritage (EoH) toolkit (Hockings et al., 2008), IMET was developed in close consultation with several PA authorities and managers to meet their needs. As a result, IMET provides PA authorities and managers with direct operational support on the planning, monitoring and evaluation of PA performance. IMET delivers structured, robust and result-oriented analyses based on information collected on-site and through participatory methods. By organizing and visualizing the collected information in a decision support system, it is possible to define benchmarks, facilitate planning, analyse the state of conservation and focus the evaluation of protected area management effectiveness on conservation objectives.

The initial version of IMET includes three modules:

1) PA context: In this module, full information on a PA and its surroundings is collected, including basic protected area data and the protected area's key values (species and habitats), threats and ecosystem services.

2) PA management effectiveness: This module covers a detailed assessment of the current PA management conducted along the six elements of the PA management cycle: context, planning, inputs, processes, outputs and outcomes.

3) Decision support system: Based on statistical processing of the collected information, this module provides a well-structured summary of the IMET assessment through data visualization tools in order to support analysis and decision-making by the PA manager and authority.

The decision support system currently synthesizes the collected information into 38 main indicators (three indicators on context, six on planning, five on inputs, 18 on processes, three on outputs and three on outcomes). Other IMET modules are in preparation, including for assessing critical aspects of protected area governance and to further support planning and reporting.

IMET assessments are carried out on site in a workshop setting with the guidance and support of one or two trained IMET coaches. The assessments usually involve the protected area manager, other protected area staff, representatives from the national protected area agency, key protected area partners (e.g. donors, NGOs, etc.) and other stakeholders. The IMET coaches prepare and facilitate the assessment, for example by training the participants in the use of the IMET methodology and by assisting with the completion of the IMET forms, and work with the PA management to analyse the assessment results and prepare a report and recommendations after the workshop. The coaches are usually from the region or country concerned, and have themselves been trained as IMET coaches based on the Coach Observatory Mission Information Toolkit (COMIT) (Paolini et al., 2016).

The initial (baseline) IMET assessment for a protected area usually takes two to three days to complete, while subsequent repeat assessments (e.g. on an annual basis) can often be completed within one day.

To date, over 100 IMET assessments have been carried out in around fifteen countries, especially in Central and West Africa but also in some North African countries and in Bolivia. So far IMET has been applied primarily to terrestrial PAs, but also some marine PAs, for example in Guinea-Bissau and Senegal. The assessed PAs include many national parks but also nature reserves, nature monuments, Ramsar sites and World Heritage Sites. IMET has also been applied to a number of transboundary protected areas, including Mount Elgon National Park (Kenya and Uganda).

Several countries (e.g. Burundi and Gabon) have applied IMET at the level of their PA networks, and Bolivia has adopted a modified version of IMET as a planning tool in its national PA agency. The European Commission (DG DEVCO) has also adopted IMET as a mandatory tool for all the PAs that are supported by European development funding. Phase 2 of the BIOPAMA Programme will support at least one repeat assessment of all the PAs that had an IMET assessment in phase 1, plus new IMET assessments in African, Caribbean and Pacific countries.

The IMET methodology is currently being updated and revised based on feedback from the first phase of assessments. A new version of the methodology, together with better documentation and guidance, will become available in the near future. Basic information on where and when IMET assessments have taken place will be regularly reported to the GD-PAME to support global reporting.

Based on the experience with the IMET assessments carried out so far, key benefits of the IMET methodology include:

- Clear visualization of the collected information and relevant, robust and comparable indicators,
- Reinforced PA planning, monitoring and evaluation through participatory processes,
- Increased local ownership of data collection, management and analysis, and
- Benchmark setting for result-oriented PA planning.

PA managers are able to analyse the current situation, identify strengths and weaknesses, and define the improvements necessary to achieve their objectives, due to the way the information is structured in the IMET forms and decision support system, the quantification of clear management and conservation objectives, and the option to visualize the relative contribution of different management aspects to overall management effectiveness (Paolini et al., 2016).

To conclude, the IMET methodology was developed and designed in order to directly support PA authorities and managers to improve the performance of protected area management and, more generally, biodiversity conservation.

The IUCN management effectiveness framework

The IMET methodology builds on the IUCN management effectiveness framework and its six elements (Hockings et al., 2006). The development of IMET has been informed by the strengths and weaknesses of existing systems such as RAPPAM, METT and EoH. IMET is more comprehensive but still compatible with METT (a conversion tool exists) and can also be used to demonstrate compliance with many elements of the IUCN Green List Standard. The IMET indicators cover all the six elements in the PA management cycle – context, planning, inputs, processes, outputs and outcomes – and are visualized in a decision support system that facilitates protected area planning, monitoring and reporting.

BOX 5.2: TRANSBOUNDARY COMPLEX OF BSB YAMOUSSA, CAMEROON AND CHAD

The Binational Sena Oura - Bouba Ndjida (BSB Yamoussa) Complex includes the Sena Oura National Park in Chad and the Bouba Ndjida National Park in Cameroon. This conservation complex situated in Central Africa covers some 3,000 km². It is part of the Guinean-Sudanian savannah ecosystem and hosts emblematic, rare and endangered species such as Derby's eland, korrigum, roan antelope, giraffe, lion and elephant.

The management authorities of the two parks have adopted the IMET methodology to help their annual planning, monitoring and evaluation. The first IMET assessment carried out in 2016 coincided with the beginning of the BSB Project, which is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), and subsequent IMET assessments have taken place at the beginning of each year.

The IMET participatory approach has enabled stakeholders from the BSB Complex to discuss how the management authorities manage and operate in order to better understand challenges and opportunities, identify concrete targets, and track progress. Desired outcomes derived thereof were translated into concrete activities in the operational plan of the BSB Project.

One of the key results is the extensive use of IMET for planning purposes in the form of operational plans and the review of management plans. It was useful in addressing issues of importance such as payment for ecosystem services and climate change which were not taken into account by the park managers previously.

The 2018 IMET assessment was conducted differently: A joint Chad-Cameroon park management team including officers from the line ministry in N'Djamena and guest park managers reflected on laying the groundwork at the binational level for planning joint activities for both national parks.

The evident trends in the 2016-2018 IMET scores greatly helped the assessment of the impact of the BSB Project interventions in key areas of the BSB Complex management, and also helped to visualize the effect of the project design and decisions on the management effectiveness. This was a very valuable experience for the park staff, the project staff and their key partners.

This case highlights that the IMET methodology constitutes a sound basis for the assessment of the management effectiveness of protected areas. It is a good reference framework for the piloting, execution and monitoring of biodiversity conservation of the BSB Yamoussa Complex, but should ideally also be complemented by broader governance and social assessments.

5.3 The Rapid Assessment and Prioritization of Protected Area Management (RAPPAM)

The aim of Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) is to provide policy makers and protected area authorities with a fast and simple assessment methodology that identifies trends and barriers within management effectiveness.

RAPPAM was developed by WWF between 1999 and 2002. This methodology was designed to operate through broad-level comparisons within a network or system comprised of multiple protected areas. The final iteration was developed through trials in Algeria, Cameroon, China, France and Gabon. As of July 2018, RAPPAM has been applied in 48 countries and 1127 protected areas (UNEP-WCMC, 2018).

For RAPPAM to be applied, the sites within a protected area system are required to meet the IUCN definition of a protected area. Furthermore, application of the methodology is reliant on the political and social climate being favourable enough to allow for participation by the relevant parties. Trust and transparency must exist between administrative entities, as well as stakeholders associated with the protected area network. They must also possess adequate knowledge and data in order to complete the assessment.

RAPPAM was originally designed to be applied to government-governed, terrestrial protected areas, and primarily forested areas. If the assessment is to be used for other governance types, such as privately protected areas, questions must be adjusted appropriately. Similarly, RAPPAM can be applied to other biomes successfully, although it is fundamental that it is modified before being used within a marine protected area system.

The greater the number of protected areas assessed using the RAPPAM evaluation process, the more effective it is. Applying it to a small number (six protected areas or fewer) can result in detailed qualitative data, but cannot be used for a comparative analysis between protected areas. However, when used on a greater number (>50 protected areas), it can be used to identify more comprehensive themes within sites with similar characteristics. This may include establishing trends or common findings within sites within the same region or that have similar management objectives or sizes. When multiple protected areas are assessed, it is beneficial if their management objectives are broadly aligned. If this is not the case, dividing them into groups with similar aims increases the effectiveness of the assessment.

To enhance the effectiveness of the evaluation, it is important that the following objectives are addressed. These objectives are aimed at enhancing resource allocation, support and awareness, and ultimately leading to adaptive management:

1. Quantify the scope, severity and prevalence of the different threats that may be present in the protected area system.
2. Explore the most prevalent barriers, strengths and weaknesses within management effectiveness.
3. Identify areas of high ecological and social importance and vulnerability.
4. Indicate potential prioritisation and urgency in the conservation of particular protected areas.
5. Explore how the system or group is functioning and performing.
6. Establish corrective actions to initiate improvements in management effectiveness within the system through strategic and appropriate policy interventions and recursive steps to follow up in the future.

The evaluation process

There are five stages within the RAPPAM process:

| Establish the scope of the assessment | Assess existing information for each protected area | Implement the RAPPAM questionnaire | Analyse the findings | Identify the next steps and recommendations |

The first stage in the process is to **establish the potential scope of the assessment**. This will cover the assessment's parameters, including the spatial scope and which protected areas, systems or networks are to be included. The relevant and appropriate stakeholders required are identified, which may include park authorities, policy makers and representatives from local communities.

Once this is complete, existing information should be gathered that can provide a contextual basis for the assessment.

The largest time component within the methodology is **administering the questionnaire**. Questions are structured to begin with values and threats, and subsequently move on to vulnerability. These are then followed by questions relating to the protection dynamics of the area and system.

Each section is divided into a number of headings which relate to specific dimensions including the biological importance and the staffing of the area. Each heading covers multiple questions. Responses are recorded using a four-part Likert scale and with the scoring; no (0), mostly no (1), mostly yes (3) and yes (5). Threats and vulnerability are rated on their extent, impact and trend.

Responses are gathered largely through the use of one or more interactive workshops. Protected area managers, policy makers, and other stakeholders are invited to participate in these workshops. During the workshops, the protected areas are evaluated according to the RAPPAM questionnaire, the **results are analysed** and the subsequent **next steps and priorities are identified**.

Particular consideration must be given to the attendees of the workshop, as it is essential to encourage the participation of a broad range of stakeholders to ensure validity of the results. At least one park manager and at least one top-level representative from the appropriate government ministry is needed to ensure changes can be physically and lawfully implemented. If appropriate, relevant financial donors, and local and international NGOs may be invited to assist with implementing recommendations established at the workshops. Local community members, universities and tourism operators can also be invited to add depth and comprehension to the outcomes of the evaluation. Disagreements between these entities are recorded and reflected within the RAPPAM report.

The IUCN management effectiveness framework

RAPPAM complements other assessments which build upon the IUCN management effectiveness framework within a protected area network. While offering a broad comparative analysis of the protected area effectiveness within a system, the evaluation is not intended to provide detailed site-level adaptive management guidance. Other methodologies that employ in-depth field assessments are more appropriate to establishing specific site-level recommendations, such as physical steps to mitigate site-level threats, or ways to improve the management of specific biological assets.

It is important to note that RAPPAM can be used to develop and inform the selection of appropriate specific site-level evaluations of management effectiveness. It provides guidance on management criteria and indicators of sites within protected area networks, and it can also be used to sense-check other assessments and reveal where more thorough analysis and reviews are needed.

BOX 5.3: NATIONAL PROTECTED AREA NETWORK OF GEORGIA

The goal of this assessment was to 'promote improved management for protected areas' by implementing WWF's RAPPAM methodology in Georgia. The first objective was to produce measurable data and analyses on the overall effectiveness. The second was to establish recommendations tailored to each protected area, depending on their vulnerability and the urgency of threats. The assessment was applied to a total of nineteen protected areas, with some sites in the country excluded due to political conflicts.

An interactive workshop was held with 48 participants present. Attendees consisted of national and international protected areas specialists, high-level decision makers, field managers, representatives from NGOs and scientists. The workshop was held in the Borjomi-Kharaguali National Park and ran over the course of three days.

The questionnaire found logging to be the most prevalent threat facing protected areas, followed by conservation of land use and mining. Vulnerability assessment identified factors including illegal activities within the protected areas and the difficulty in monitoring them, as well as civil unrest and corruption, hampering authorities. Strengths included protecting a high level of diversity of ecosystems, which were seen to be largely intact. Weaknesses ranged from a lack of effective protected area law enforcement to no comprehensive inventory of biological diversity within the country.

These weaknesses were addressed through a series of recommendations. This included a recommendation to further develop Georgia's protected area policies in order to integrate them into wider social, financial, economic, spatial, and land-use planning. There is also a need to improve protected area management inputs and planning, and to measure and prioritise the vulnerability of, and threats to, protected areas.

5.4 How is your MPA doing?

The 'How is your MPA doing?' methodology was developed between 2000 and 2004 with the overarching goal of improving the management of Marine Protected Areas (MPAs). The methodology was developed in response to concern that MPAs were being increasingly being designated with unrealistic expectations of outcomes, leading to uniform design and a failure to meet management objectives (Jameson et al., 2002).

The methodology was developed through a collaborative initiative, launched in 2000, between the IUCN-WCPA and WWF. A key output of this initiative was the publication 'How is your MPA doing? A Guidebook of Natural and Social Indicators for Evaluating Protected Area Management Effectiveness'. This was the first comprehensive methodology for monitoring and evaluating management effectiveness of MPAs.

The methodology is flexible and can be adapted to fulfil the evaluation needs or resource availability of different MPAs, and can be integrated into existing practices. The evaluation is based on a set of biophysical, socioeconomic, and governance indicators. The ten biophysical indicators measure the biotic, abiotic and aerial conditions of the ocean and coast, and include indicators to examine the status of focal species populations, characterise the ecological conditions and measure the level of biological resources generated by the marine environment. The sixteen socio-economic indicators address the overall value of the MPA, in addition to being focused on the achievement of social and economic goals. These include indicators to measure people's perceptions, to understand marine resource use at the community level, and to measure components of the MPA's economic value. The sixteen governance indicators have a significant focus on participation in MPA management. These include indicators to measure stakeholder participation and satisfaction, stakeholder involvement in enforcement, training provided and the existence and adoption of a management plan.

These indicators measure the effectiveness of management actions in attaining goals and objectives that are specific to MPAs, the marine environment, and coastal communities. The evaluation process is intended to help managers and practitioners improve the management of MPAs by identifying ways to reach their goals and objectives more effectively and efficiently. Thus, the main purpose of undertaking this methodology is to support adaptive management, rather than as a scorecard to compare MPAs.

Specific indicators to evaluate management effectiveness in marine ecosystems, and where coastal communities are involved, can be used for a number of purposes. These purposes include highlighting progress towards management objectives, assisting in identifying new priorities for future management objectives, and promoting better management policies and practices. In addition, the evaluation results can serve multiple audiences, including donor agencies, policy makers, management teams, and conservation and development NGOs. Management teams might not only use evaluation results to improve future performance and document achievements, but also to seek assistance in addressing identified challenges. Coastal communities and different stakeholder groups might use evaluation results to see how far their interests have been taken into account and addressed in the management of an MPA.

The evaluation process

| Selecting your indicators | ▶ | Planning your evaluation | ▶ | Conducting your evaluation | ▶ | Communicating results; adaptive management |

The minimum requirements of this methodology are:

- The MPA is formally (legally) designated.
- There is an ongoing management planning process.
- There is a written management plan, including clearly stated goals and objectives.
- The MPA has been in operation for at least two years.

The first step in the process is **selecting an appropriate set of indicators to measure.** Good indicators are measurable, precise, consistent, sensitive and simple. They provide information on concepts which are not directly measurable – such as effectiveness. As 'management effectiveness' is a multidimensional concept, a range of different indicators are needed in order to determine whether or not the goals and objectives of the MPA is being achieved.

The guidebook includes 42 indicators. For this methodology, the most appropriate indicators for the specific MPA are chosen by matching relevant indicators to the MPA's goals and measurable objectives. If it is not feasible to measure all the indicators identified, the indicators are reviewed and prioritised. There is no single sub-set of indicators which should be used, thus the selected indicators could be unique to the specific MPA.

Once the indicators are selected, the next step is **planning how to evaluate these indicators.** This includes assessing the resources needed to measure indicators, securing resources as necessary, and developing a timeline and work plan for the evaluation. At this stage, it is also important for the audience(s) to be determined so that a plan for communicating and reporting can be tailored, making the evaluation results more useful.

The evaluation is conducted by implementing the evaluation work plan. This goes beyond collecting data to carefully considering timing, logistics, and the process for managing and analysing data. It is also important that the data goes through a peer review process to encourage a thorough and independent validation of the indicator results and analytical findings.

The next two steps involve practical applications of the data collected. The first of these is **sharing the results and analysis**; this should be tailored to the different target audience(s), by considering the most meaningful messages and presentation formats to reach the audience most effectively. A strategic approach can be used for messaging, in which communication encourages action or behaviour which would be favourable to achieving the MPA's goals and objectives. Target audiences can also combine the results with other data sources and decision-making needs.

Finally, and perhaps most importantly, the results are used to **adapt management strategies**. Adaptive management can be defined as 'the process of integrating design, management and monitoring to systematically test assumptions, learn and adapt' (Salafsky et al., 2001). Through conducting the evaluation, the information generated can be used to adapt and improve the MPA's management, planning, accountability and overall impact. This methodology can be used repeatedly over time intervals, theoretically allowing the continued refinement of management practices through adaptive management cycles. This creates a positive feedback loop continually improving management practices, successively moving closer towards the MPA reaching its goals and objectives, and ultimately sustaining it there.

The IUCN management effectiveness framework

The 'How is your MPA doing?' methodology builds on the IUCN management effectiveness framework and its six elements (Hockings et al., 2000). Building on this foundation, the 'How is your MPA doing?' methodology's indicators were developed to be specifically relevant to MPAs. The majority of the indicators in the guidebook measure outputs and outcomes of MPA management, which represent tangible benefits associated with MPAs. The guidebook should be used in conjunction with other materials and literature to ensure that the context, planning, process and inputs of MPA management are evaluated.

Box 5.4: El Vizcaino Biosphere Reserve, Mexico

El Vizcaino Biosphere Reserve is located midway down the Baja California Peninsula in Mexico. Encompassing two lagoons and a large stretch of land between them, El Vizcaíno Biosphere Reserve provides a winter home for grey whales and other marine mammals, and habitat for thousands of migratory waterfowl. Plant life includes Sonoran Desert vegetation and, at the water's edge, mangroves.

The 'How is your MPA doing?' management effectiveness evaluation is beginning to yield positive results in the El Vizcaino Biosphere Reserve by helping the management team to meet the Biosphere Reserve's goals and objectives. Whilst the methodology has been flexibly applied, the principle of "effectiveness evaluations" of management actions is being incorporated with useful results.

Indicators are used in evaluations, especially in cases when it is hard to measure results from management actions. For example, the Biosphere Reserve's management team provides environmental education to children and adults. It takes time to evaluate whether this action has had a positive impact on the culture or the relationship between the people and the environment, and it is particularly difficult to understand which other factors have impacted the results. Thus, the management team has measured if abilities or new knowledge have been learnt by participants, as an indicator to measure their success.

Overall the management team has found that "the principles of planning, establishing a database, establishing evaluation indicators, collecting data, and obtaining feedback from the analysis, have been very useful". They found that a drawback of this methodology is that they need "more time and more focus" on the method to implement it fully, so that they can develop "better baselines, better indicators" and "improve data collection".

The team is at the beginning of an iterative process, flexibly applying this methodology to adapt their management practices to achieve El Vizcaino Biosphere Reserve's goals and objectives.

6. The 2018 edition of the United Nations List of Protected Areas

6.1 Preparation of the report

The 2018 UN List report, as well as countries List of protected areas, were prepared in close collaboration with national governments, through extensive correspondence.

A CBD notification (Ref.: SCBD/SPS/DC/SBG/ESE/86679) was sent to countries in July 2017 with the request to review and update management effectiveness information stored in the GD-PAME (version pre-2018). All CBD national focal points and Programme of Work on Protected Areas (PoWPA) focal points, as well as the WDPA national contact points, were contacted in July 2017 and were provided a copy of current management effectiveness information holdings in the database.

The management effectiveness information presented in this report was received up until June 2018. Information submitted after this date is included in the GD-PAME, which can be accessed online at https://pame.protectedplanet. net/, but is not included in this present edition of the UN List.

6.2 Format and criteria for inclusion

In line with the 2003 and 2014 editions of the UN Lists, the present edition has only two criteria for including a protected area in the statistics presented here: its designation through legal or other effective means, and its compliance with the IUCN definition of a protected area.

For the spatial components of the analysis, additional criteria have been applied. The spatial analysis presented in the next chapter of the report includes all protected areas in the WDPA except:

- The UNESCO Man and Biosphere Reserves, since many buffer areas of these sites do not meet the IUCN definition of a protected area;
- All proposed sites which have not yet been designated, and sites where the status is not reported, since it is not known whether these sites are designated;
- Protected areas submitted as points with no reported area.

These sites have, however, not been excluded from the national lists. These lists are in the same format as the 2014 national lists, with the addition of two fields to provide information on the management effectiveness methodology/ies used (methodology; year). The information populating these fields has been drawn from the GD-PAME. All other information in the national lists was extracted from the WDPA. The descriptive information included in the lists includes: name and designation of the protected area, status, size (in km^2), and IUCN management category.

6.3 Information gaps and quality of the information

This publication is an initial effort to assess the extent to which management effectiveness assessments are being carried out, and is intended to form the basis of more in-depth work in future years. We acknowledge that gaps are present, especially in the information of countries that were unable to respond to the CBD notification requesting updated information. Data that may help to fill these gaps would be gratefully received at protectedareas@unep-wcmc.org.

As with other global databases, there are caveats associated with drawing conclusions from the data in the WDPA and GD-PAME; the databases on which this UN List is based:

- Some protected areas in the WDPA do not have an area reported – hence potentially underrepresenting the coverage of the country's actual network;
- For countries which have not submitted any updates for this report, pre-existing information in the WDPA has been used. However as this information is sometimes outdated, the country's network may be misrepresented;
- The descriptive information in the WDPA is not always complete. For example, some sites do not have year of designation reported;
- It is possible that some sites within the WDPA are designated but not managed. In the absence of detailed knowledge of the sites, these sites are impossible to identify in a global dataset. This UN List therefore does not delist sites reported by countries or make any judgment on the level of site management or conservation status.
- Although the area should be reported in km^2, some areas may be reported in different units. Similarly, transferring between projection systems can also lead to differences in area calculations. Sites impacted by this issue can be difficult to detect in a global dataset.
- Protected area records in the WDPA contain no information on the degree of human use, either allowed or illegal, nor do they provide any information on the remaining habitat cover or species populations.
- Many countries have submitted management effectiveness information to the GD-PAME on only a subset of their protected area network;
- Management effectiveness information for protected areas that are not represented in the WDPA are not included;

It is hoped that the publication of this edition of the UN List will encourage countries to improve and strengthen the monitoring of their protected area networks, and report on their efforts to the WDPA and GD-PAME.

7. Analysis of the 2018 UN List of Protected Areas

The regional divisions of the world used for this analysis are the same as those used in the 2014 edition. They are based on the nine regional categorisations of the CBD, with two additional regions (Areas Beyond National Jurisdiction (ABNJ) and Southern Oceans). Forty nine entities not represented in the CBD regional divisions have been included in the relevant geographical regions to ensure that no protected areas are omitted, and that protected areas are assigned to the regions in which they are located geographically. A list of the regions and countries listed in each region used is presented in Annex 2.

7.1 Coverage of the world's protected areas

The 2018 edition of the UN List contains **238,563** protected areas covering a total area of 46,414,431 km². In total, 14.87% of the land (excluding Antarctica) and 7.27% of the sea is protected. Figure 3 presents the distribution of the global protected area network as of July 2018.

Terrestrial protected areas ■ Marine and coastal protected areas
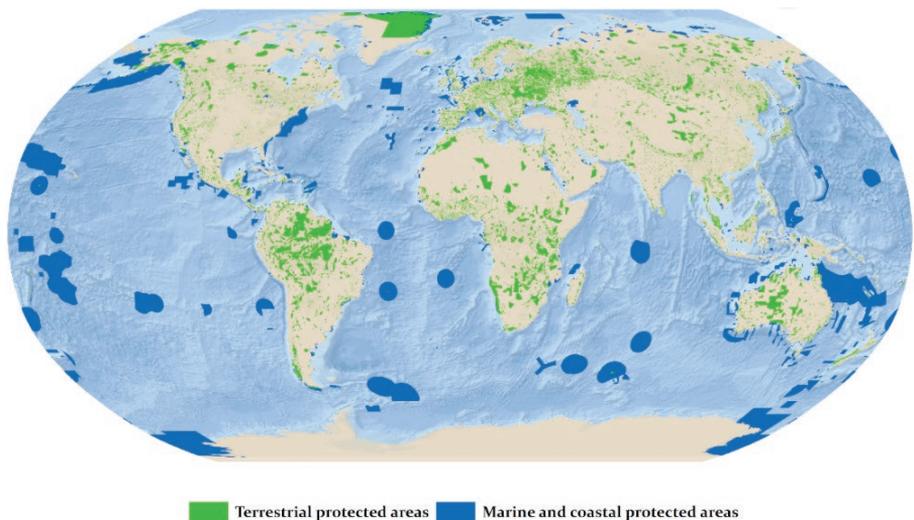
Figure 3: *Map representing designated marine and terrestrial protected areas as of July 2018 (Source: UNEP-WCMC, 2018).*

The area set aside for protection has increased significantly since the publication of the first edition of the UN List in 1961-62. Table 1 presents the number of protected areas, and area covered, as reported through the successive editions of the UN List (Chape et al. 2003, Deguignet et al. 2014). Over the last four years, more than 13 million km² has been added through the addition of almost 30,000 sites to the WDPA. This is roughly equivalent to the area added during the preceding ten years, which was associated with the addition of over 100,000 new sites (Figure 4). However, the addition of over 30,000 sites does not necessarily equate to the creation of 30,000 new protected areas. It is likely also to reflect improved reporting to the WDPA by countries, including of sites that have existed for a number of years.

Table 1: *Cumulative growth of the reported protected area network since 1962 (Source: UNEP-WCMC, 2018)*

Year	Number of sites	Total area protected (km²)
1962	9, 214	2,400,000
1972	16,394	4,100,000
1982	27,794	8,800,000
1992	48,388	12,300,000
2003	102,102	18,800,000
2014	209,429	32,868,673
2018	238,563	46,414,431
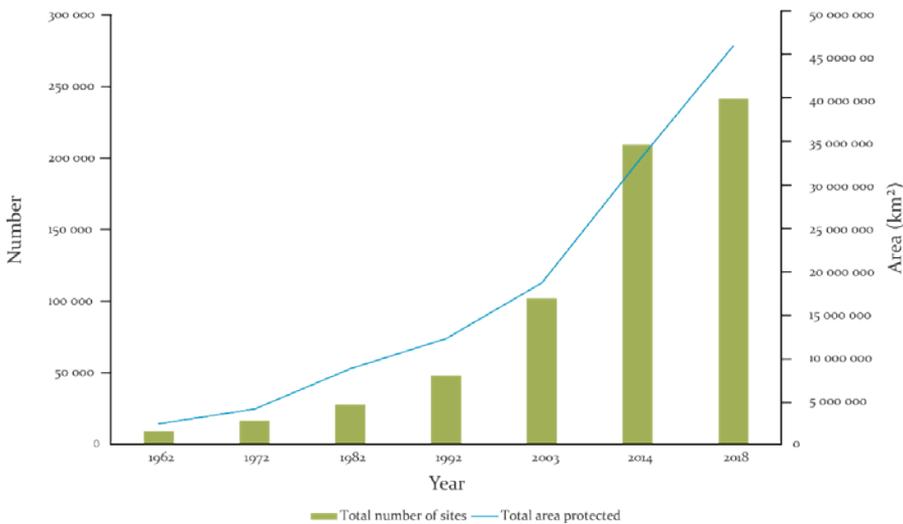
Figure 4: *Evolution of the terrestrial and marine protected area network, in number of sites (green bars) and in area (km², blue line) since the first World Parks Congress in 1962, based on previous versions of the UN List (Source: UNEP-WCMC 2018, with data from Chape et al. 2003).*

Figure 5 shows the distribution of areas added since 2014. The area protected on land has been increasing continuously over the last four years, though more slowly than the area protected in the marine environment. This trend in the marine realm is largely due to the designation of large marine protected areas in many regions of the world. The Marae Moana (Cook Islands Marine Park), for example, was designated in 2017 and covers an area of over 1.9 million km².

At the regional level, coverage statistics differ greatly when comparing the terrestrial and marine realms (Figures 6 and 7). On land, the majority of regions have reached, or are close to reaching, 17% coverage. In the marine environment, the coverage is more variable between regions, with over half of the regions still under 10% coverage. However, protection in the marine environment has been expanding rapidly in recent years. As a result, in 2017 marine protected areas overtook their terrestrial equivalents in terms of area covered for the first time (CBD/SBSTTA/22/INF/30).
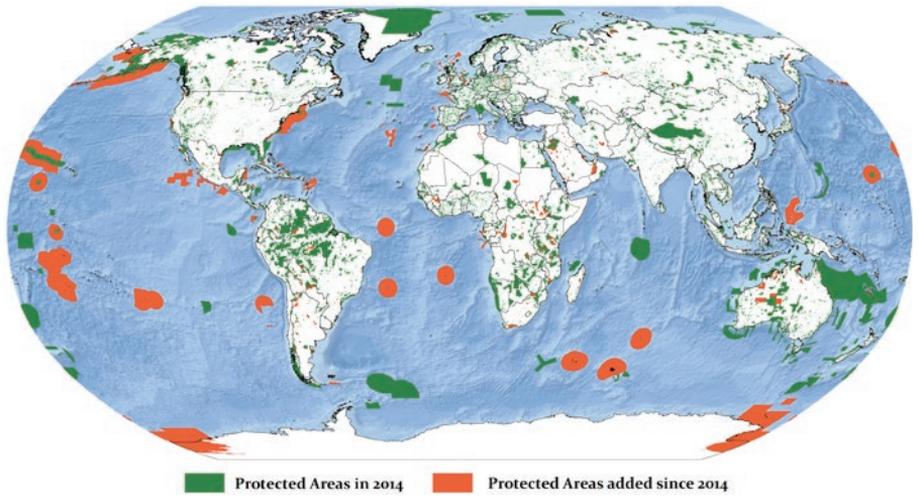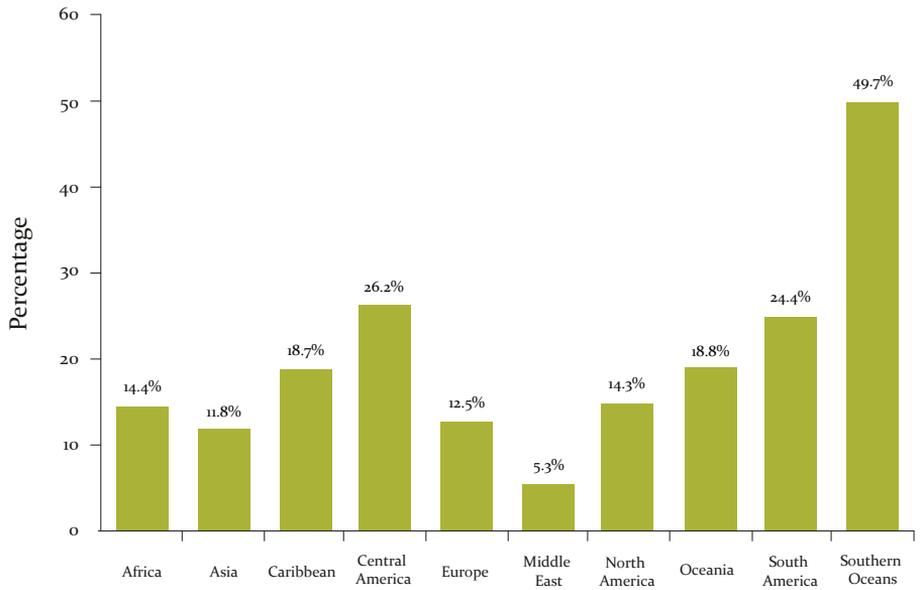
Figure 5: *Map representing the designated marine and terrestrial protected areas added to the WDPA between July 2014 and July 2018 (Source: UNEP-WCMC, 2018).*

Figure 6: *Percentage of land covered by protected areas in CBD regions. The numbers indicate the percentage of land protected for each region (Source: UNEP-WCMC 2018).*
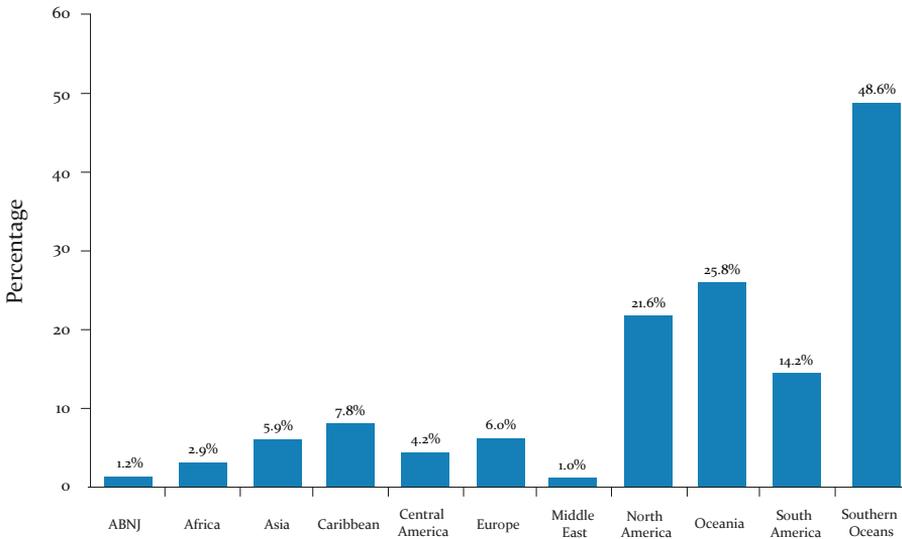
Figure 7: *Percentage of marine area covered by protected areas in CBD regions and ABNJ. The numbers indicate the percentage of marine area protected in each region (Source: UNEP-WCMC 2018).*

North America, Oceania and Southern Oceans have a larger marine percentage protected than their lands. This is partly due to the designation or expansion, over the past few years, of very large marine protected areas such as Palau National Marine Sanctuary (Oceania) designated in 2015 and Papahanaumokuakea Marine National Monument (North America) designated in 2006 and expanded in 2016.

The number and size patterns of protected areas vary significantly between regions (figures 8 and 9). Over 60% of the world's sites are located in Europe. These sites however account for less than 10% of the total area covered by protected areas. Conversely, South America and Oceania report a relatively smaller number of sites (1.9% and 7.3% of the total number of protected areas respectively) but these sites cover a much larger area (making up almost 14% and 30% of the global protected area network respectively).
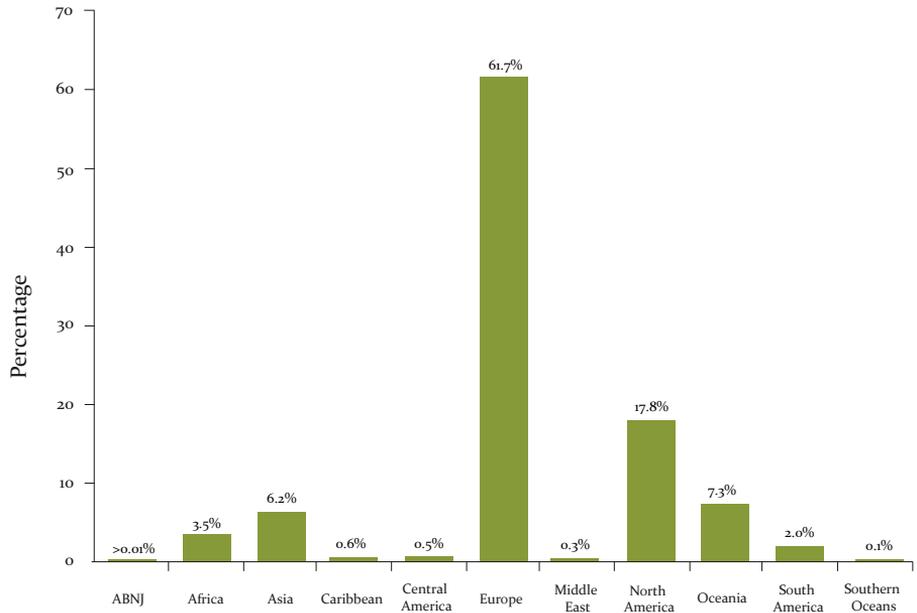
Figure 8: *Percentage of protected areas distributed in different CBD regions (Source: UNEP-WCMC 2018)*
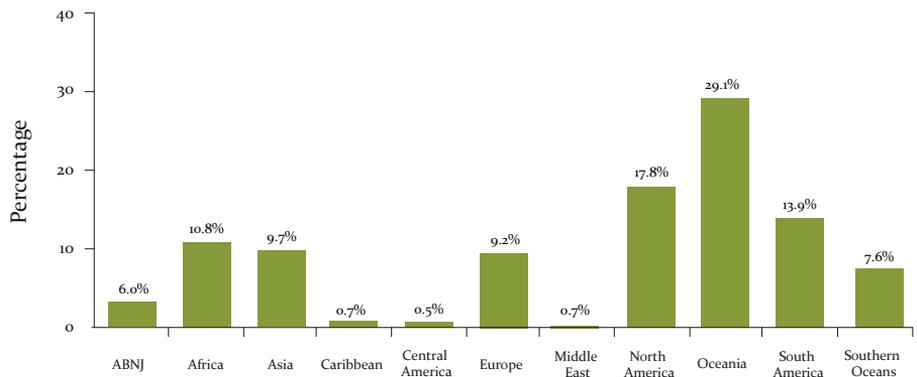
Figure 9: *Percentage of the total area covered by the protected area network among CBD regions (Source: UNEP-WCMC 2018)*

The varying number of overlapping protected areas in each region contributes to explaining the differences between figures 8 and 9. Globally, a quarter of the world's protected areas overlap with two or more other designations, and this phenomenon is more common in some regions than others (Deguignet et al. 2017). In Europe for example, over 75% of protected areas overlap with one or more other designations.

The variation in the average size of protected areas between regions also partially explains the differences. Excluding the 4% of records stored in the WDPA without any area reported, over half of the protected areas in the database have an area smaller than 1km^2 (Figure 10), a majority of these sites being located in Europe. The proportion of sites in the other size categories has also increased. This can be linked, in part, to the large marine protected areas created in many countries in recent years.
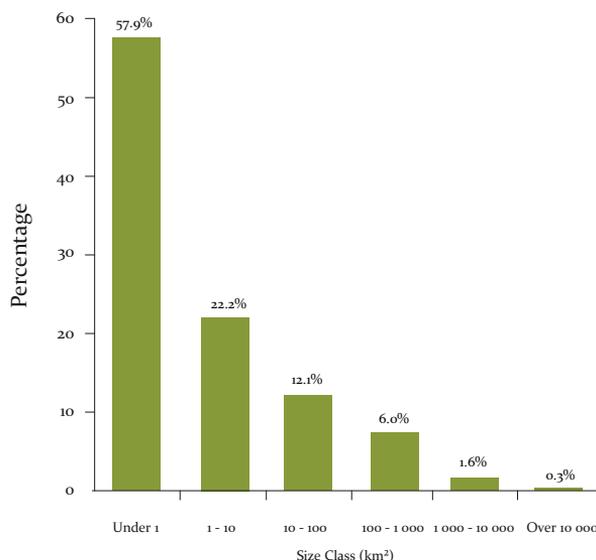
Figure 10: *Proportion of sites per size class, in km^2 (Source: UNEP-WCMC 2018)*

Sites over 10,000 km^2 are present in all regions though predominantly in South America, Africa, Asia and North America. Europe has the highest proportion of smaller sites among all regions (under 10 km^2); and also has the highest proportion of sites with no reported area (Figure 11).
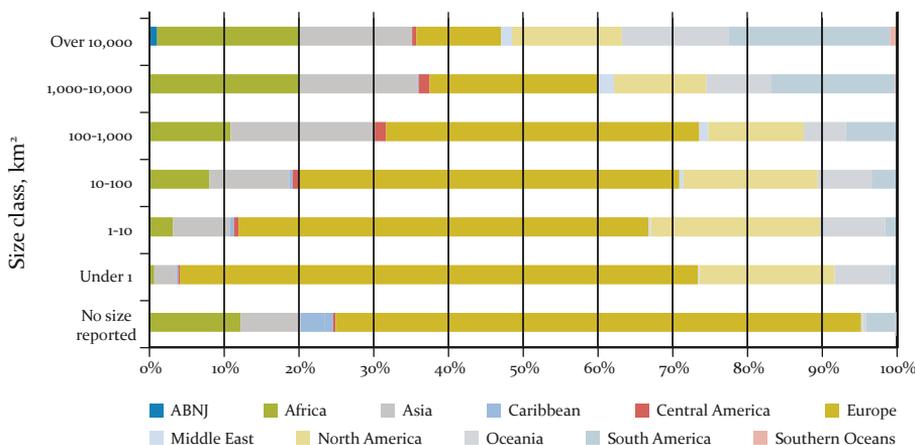
Figure 11: *Comparison of the sites' size distribution within CBD regions (Source: UNEP-WCMC 2018)*

In the ABNJ, protected areas are relatively large; all are over 1,000 km^2 and the majority are over 10,000 km^2 (Figure 12). Within the other regions, protected areas can be of any size, from very small to very large. Although in many regions such as Europe, North America, Caribbean, and Oceania relatively small sites (under 1 km^2) make up the majority of the regions' protected area network.
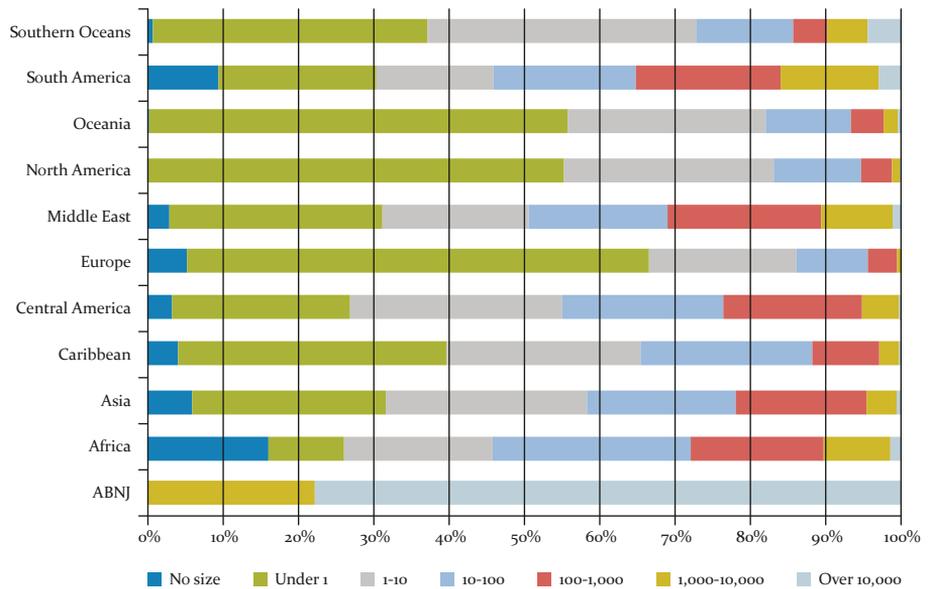
Figure 12: *Comparison of the sites' size distribution within regions (Source: UNEP-WCMC 2018)*

In 2014, two sites exceeded 1 million km². In 2018, seven protected areas, all in the marine environment, report a size over 1 million km² (table 2). The Ross Sea Region Marine Protected Area, in the Antarctic, is currently the largest protected area in the world with an area exceeding 2 million km².

Table 2: *Attributes of the 10 largest designated protected areas (Source: IUCN and UNEP-WCMC 2018)*

Region	Name	Designation	Type	Area (km²)
Antarctic	Ross Sea Region Marine Protected Area, Antarctic	Marine Protected Area (CCAMLR)	Marine	2,090,027
Oceania	Cook Islands Marine Park, Cook Islands	Marine Park	Marine	1,976,000
Southern Ocean	Réserve Naturelle Nationale des Terres Australes Françaises, Terres Australes	Réserve Naturelle Nationale	Marine	1,662,774
North America	Papahanaumokuakea Marine National Monument, USA	Marine National Monument	Marine	1,508,870
Oceania	Natural Park of the Coral Sea, New Caledonia	Parc Naturel	Marine	1,292,967
Oceania	Pacific Remote Islands, United States Minor Outlying Islands	Marine National Monument	Marine	1,277,860
Southern Ocean	South Georgia and South Sandwich Islands Marine Protected Area, South Georgia and South Sandwich Islands (UK)	Marine Protected Area	Marine	1,070,000
Oceania	Coral Sea, Australia	Commonwealth Marine Reserve	Marine	989,836
North America	Nationalparken i Nord- og Østgrønland	National Park	Terrestrial	972,000
North America	Steller Sea Lion Protection Areas, Gulf, USA	Steller Sea Lion Protection Areas	Marine	869,206

7.2 Management and governance characteristics of the world's protected areas

Protected area governance refers to the processes by which decisions about a protected area are made, and who makes those decisions. Management refers to day to day activities that take place as determined by the governance authority. This includes equitable representation of local people and other relevant stakeholders, including both women and men, in the governance and management of protected areas. Work has been done to assess equitable governance of protected areas globally, but further efforts are needed both to monitor this and to ensure that women and other marginalized groups are well represented.

The IUCN protected area management categorisation system provides an international standard for the classification of protected areas according to their management objectives. Table 3 gives a definition of each category; and further detailed information about the different categories can be found in Dudley et al. 2008. The application and use of these categories is voluntary, and some countries have not applied them. In the WDPA, 14% of sites do not have an IUCN management category.

**Table 3:** *IUCN management categories and their definitions (Source: Dudley et al. 2008)*

Category	Definition
Ia: Strict nature reserve	Strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.
Ib: Wilderness area	Protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.
II: National park	Protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.
III: Natural monument or feature	Protected areas set aside to protect specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.
IV: Habitat/ species management area	Protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.
V: Protected landscape/ seascape	A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value; and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.
VI: Protected area with sustainable use of natural resources	Protected areas conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

Europe, then North America, are the regions which have the largest number of sites reported in all IUCN management categories (Figure 13). Europe is also the region which reports the highest proportion of sites where no IUCN management category has been assigned or reported.
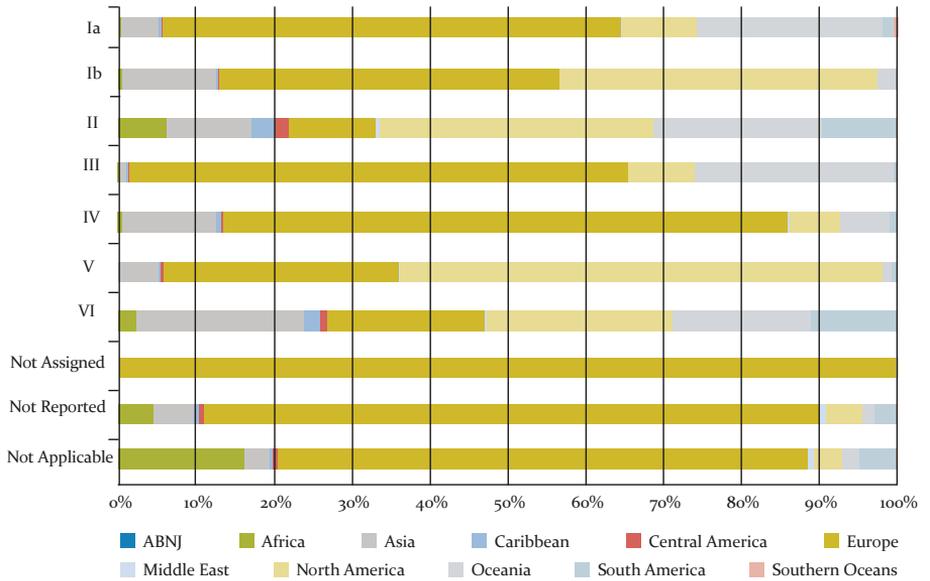
Figure 13: *Comparison of the sites' IUCN category distribution between regions, by number (Source: UNEP-WCMC 2018)*

Protected areas fall within all IUCN categories across CBD regions, but some categories are more frequent in some regions than in others. For example, the highest proportion of sites in Asia, Caribbean, Central America, Europe and the Middle East are classified in IUCN management category IV. Furthermore, in Africa the highest proportion of sites are classified in the IUCN management category II, whereas the most frequent in Oceania is category III, in North America it is category V, and in South America it is category VI (Figure 14).
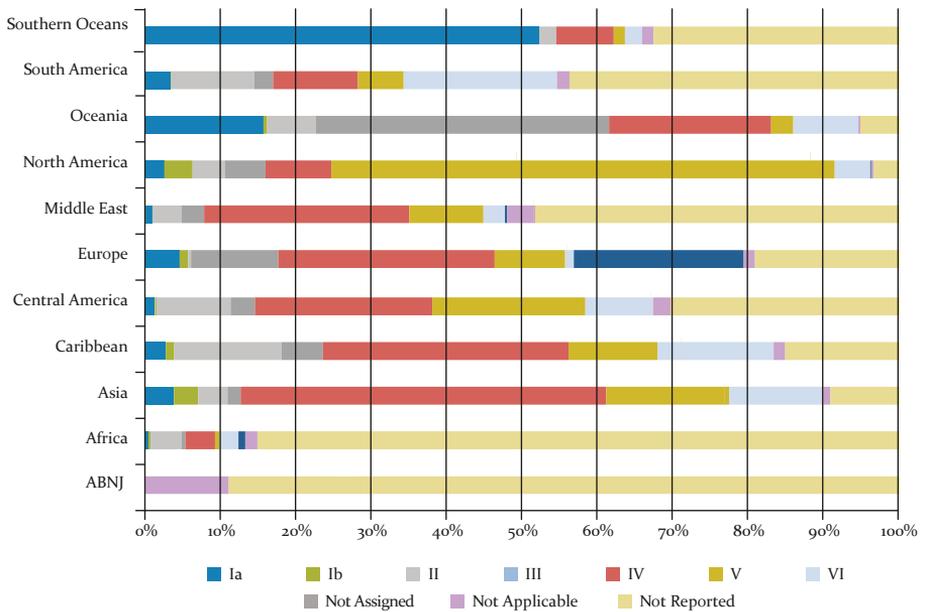
Figure 14: *Comparison of the sites' IUCN category distribution within regions, by number (Source: UNEP-WCMC 2018)*

A protected area's governance type describes the entity responsible for making decisions about how it is managed. Four governance types are recognised by IUCN, and each type includes sub-categories, a summary of which is presented in table 4.

Table 4: *IUCN governance types and subcategories*
(Source: Borrini-Feyerabend et al. 2013)

Governance by government (A)	Shared governance (B)	Private governance (C)	Gov. by indigenous peoples and loc. Communities (D)
Federal or national ministry or agency in charge	Transboundary management	Declared and run by individual landowners	Indigenous peoples' protected areas and territories – established and run by indigenous peoples
Sub-national ministry or agency in charge	Collaborative management (various forms of pluralist influence)	By non-profit organizations (e.g. NGOs, universities)	Community conserved areas – declared and run by local communities
Government-delegated management (e.g. to an NGO)	Joint management (pluralist management board)	By for-profit organizations (e.g. Corporate owners, cooperatives)	

Protected areas under each IUCN governance type are not evenly distributed between the regions (Figure 15). Protected areas under the governance of governments are concentrated in Europe; shared governance is concentrated in North America and Oceania; private governance is predominantly reported in North America; and governance by indigenous peoples and local communities is concentrated in South America and Oceania.

The proportions of IUCN governance types within regions also tend to vary, although a large number of protected areas do not have a reported governance type (Figure 16). If areas with no reported governance type are eliminated, the predominant type across all regions is governance by government. Private governance is relatively extensive across North America, Africa, and to a lesser extent Central America, Oceania and South America. Governance by indigenous peoples and local communities is extensive in South America and Australia, but is also common in Africa, North America, the Indian sub-continent and the Arctic regions of Europe.

It is important to note that governance types C and D are under-reported to the WDPA, and their relatively small number does not equate to an absence of such areas on the ground (Corrigan et al., 2016; Bingham et al., 2017).
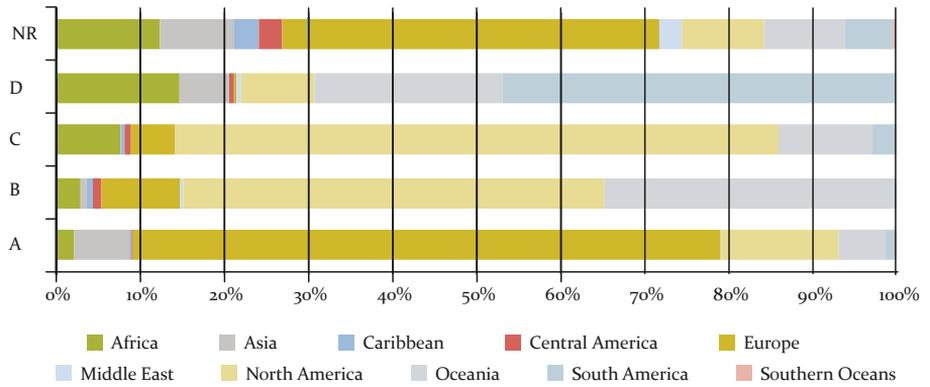
Figure 15: *Comparison between regions of the distribution of the protected area network according to the governance type, in percentage (Source: UNEP-WCMC 2018)*
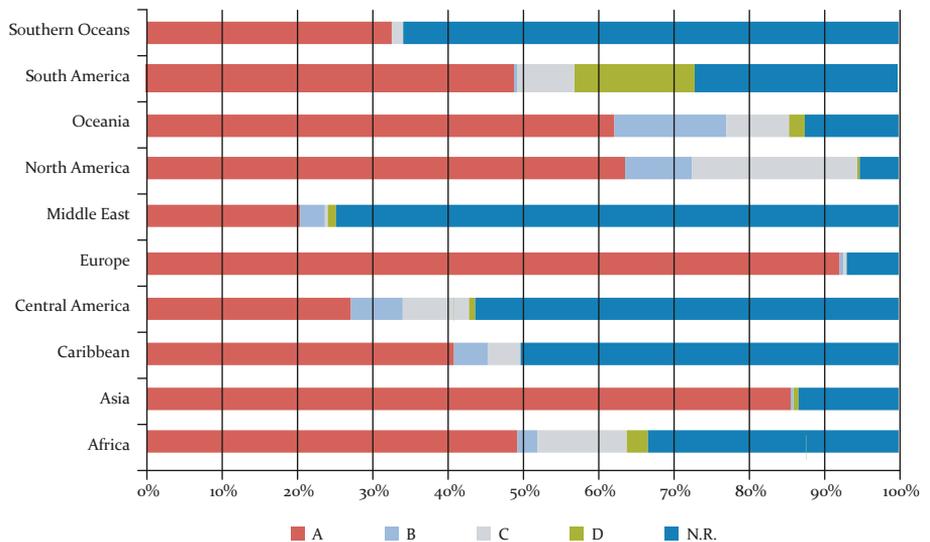
Figure 16: *Comparison of the protected areas' governance type distribution within regions, in percentage (Source: UNEP-WCMC 2018)*

7.3 Management effectiveness of the world's protected areas

Almost 10% of the protected areas in the WDPA have management effectiveness information recorded in the GD-PAME (Figure 17). Of these, about 13% (representing 1% of the total number of protected areas) have been assessed more than once.

Overall, management effectiveness information is captured for 169 countries and territories, across all regions, but Europe and South America are the regions where the highest number of protected area management effectiveness evaluations are reported in GD-PAME. Sixty-nine different PAME methodologies are reported in the database, ranging from globally applied systems such as the management effectiveness tracking tool, to country-specific ones such as Common Standards Monitoring in the UK.
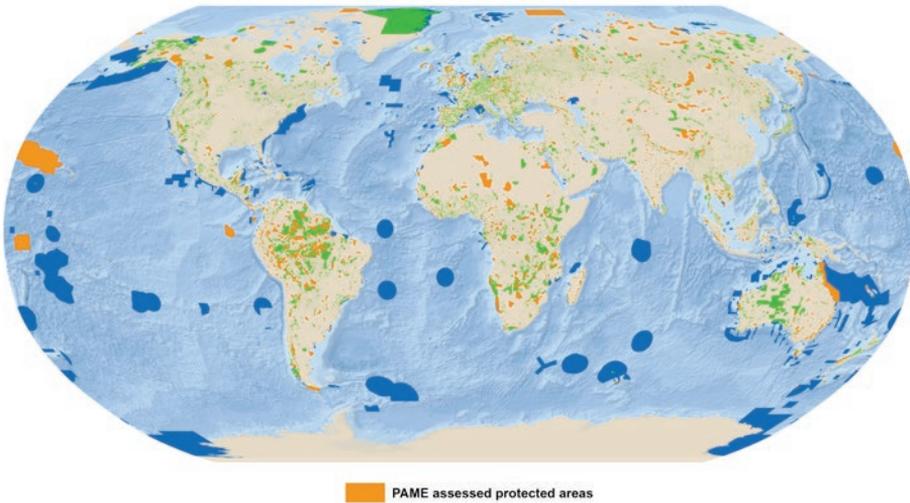
Figure 17: *Map of the protected areas that have been (orange polygons), and have not been (green and blue polygons) assessed for PAME on land and in the sea as of July 2018 (Source: UNEP-WCMC, 2018).*

Table 5: *Commonly used PAME methodologies, as reported to the GD-PAME (Source: UNEP-WCMC, 2018)*

Most used PAME methodologies	Number of assessments	Scale
Common Standards Monitoring	8091	Europe
National Inventory	5768	Europe
METT	3638	Global
NSW SOP	3527	Oceania
RAPPAM	1200	Global

In 2010, the CBD invited Parties to '*Continue expand and institutionalize management effectiveness assessments to work towards assessing 60 percent 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)*'.

As of July 2018, progress towards achieving this target remains difficult to assess due to the lack of available information in many countries of the world, and the lack of temporal data on changes in PAME scores over time (Geldmann et al. 2015). However reporting on management effectiveness is improving as more information is provided by countries to the GD-PAME. This will also increasingly allow trends in PAME for the same sites to be tracked over time, facilitating reporting in terms of changes in management effectiveness to protected areas nationally, regionally and globally.

Using the information available in the database, 14 countries and territories had assessed more than 60% of the total number of protected areas in their networks by July 2018 (Figure 18). Looking instead at area assessed, this increases to 47 countries (Figure 19). However, this is based on the assumption that PAME assessments are always applied to 100% of a given protected area's extent, which may not always be the case (for example, where assessments focus on areas of particular ecological interest within larger protected areas).

No Assessments   Under 10%   10-30%   30-60%   Over 60%
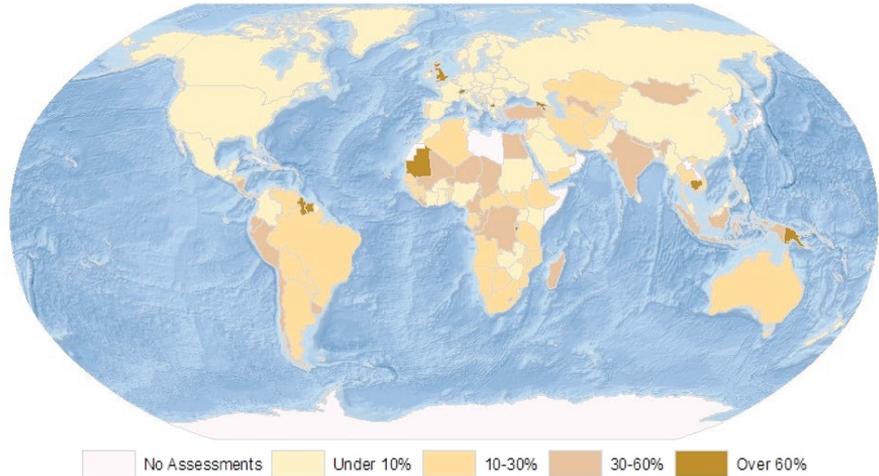
Figure 18: *Proportion by number of the protected areas of each country where assessments have been recorded.*

No Assessments   Under 10%   10-30%   30-60%   Over 60%
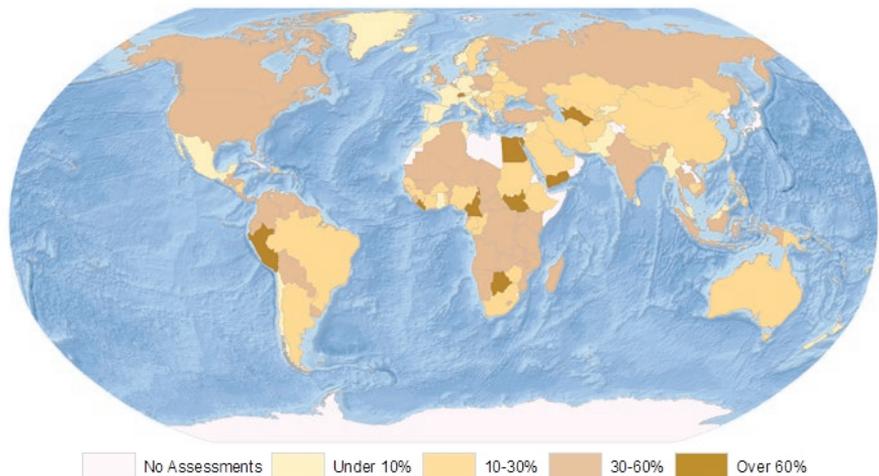
Figure 19: *Proportion by area of the protected areas of each country where assessments have been recorded.*

8. Conclusion

The global protected area network has grown significantly since the previous edition of the UN List, particularly in the marine environment. In large part, this has been due to the recent designation of expansive marine protected areas across most regions of the world. Alongside the continuing designation of smaller protected areas in both the terrestrial and marine realms, these efforts reflect a recognition by national governments and other stakeholders of the importance of protected areas for preserving biodiversity.

With the end of the Strategic Plan for Biodiversity and its Aichi Targets only two years away, countries will be stepping up efforts to set aside land and marine areas for protection. The achievement of the quantitative elements of Aichi Target 11 will be a significant success, but work is also needed to ensure that protected areas are well-connected, equitably managed, representative of ecosystems and areas of biodiversity importance, and integrated into the wider landscape and seascape.

Protected area management effectiveness assessments have also been undertaken in thousands of protected areas globally, and this UN List has collected and presented this information for the first time. It shows that many protected area agencies around the world are gathering information on the quality of management within their protected area estates. This is encouraging, but further concerted efforts are needed to better capture other management effectiveness information that may exist. It is also important to track changes in effectiveness over time so that this aspect of Aichi Target 11 can be assessed before 2020. There is a further need to better understand the impacts and effectiveness of our management actions, as well as understanding the threats protected areas are facing, so that the world can build a more effective global conservation network.

Lastly, with the concept of area-based conservation broadening over time, it will be important that future UN Lists capture data on other effective area-based conservation measures (OECMs). With the global community in the process of adopting a definition of OECMs (CBD/SBSTTA/REC/22/5), there is an opportunity to recognise and support the conservation achievements of an increasingly wide range of initiatives.

Improved data on all these elements of the world's conservation network will enable us to better understand its current status, and plan for a future in which it effectively delivers biodiversity conservation, alongside sustainable use, ecosystem services, and livelihoods.

Annex 1: ECOSOC Recommendations

Resolution 713 (XXVII): Establishment by the Secretary-General of the United Nations of a list of national parks and equivalent reserves.

The Economic and Social Council,

Noting that national parks and equivalent reserves have been established in most countries which are Members of the United Nations or members of the specialized agencies, and that they contribute to the inspiration, culture and welfare of mankind,

Believing that these national parks are valuable for economic and scientific reasons and also as areas for the future preservation of fauna and flora and geologic structures in their natural state,

1. *Requests* the Secretary-General to establish, in cooperation with the United Nations Educational, Scientific and Cultural Organization, the Food and Agriculture Organization of the United Nations, and other interested specialized agencies, a list of national parks and equivalent reserves, with a brief description of each, for consideration by the Council at its twenty-ninth session, together with his recommendations, for maintaining and developing the list on a current basis and for its distribution;

2. *Invites* States Members of the United Nations or members of the specialized agencies to transmit to the Secretary-General a description of the areas they desire to have internationally registered as national parks or equivalent reserves;

3. *Furthermore invites* the International Union for the Conservation of Nature and Natural Resources and other interested non-governmental organizations in consultative status with the Council to assist the Secretary-General upon his request, in the preparation of the proposed list.

1063rd plenary meeting, 22 April 1959

Resolution 810 (XXXI): Establishment by the Secretary-General of a list of national parks and equivalent reserves.

The Economic and Social Council,

Having considered the report entitled 'List of national parks and equivalent reserves' prepared by the Secretary-General in response to Council resolution 713 (XXVII) of 22 April 1959, and his recommendations for maintaining and developing the list on a current basis,

1. *Notes with satisfaction* that fifty-five Governments have already submitted replies to the Secretary-Generals' memorandum of inquiry inviting them to furnish information about national parks and equivalent reserves, and further replies are expected;

2. *Commends* the General-Secretary for the thoroughness of the report;

3. *Expresses its appreciation* to the United Nations Educational, Scientific and Cultural Organization and the Food and Agriculture Organization of the United Nations for their co-operation and collaboration in the preparation of the report;

4. *Notes with satisfaction* that the International Union for Conservation of Nature and Natural Resources has played a major role in the preparation of the report and has agreed to undertake the preparation of part II and subsequent additions thereto;

5. *Requests* the Secretary-General, to this end, to transmit the documentation to the International Union and to undertake the necessary consultations with the Union;

6. *Reiterates* its belief that national parks and equivalent reserves contribute to the inspiration, culture and welfare of mankind and are valuable for economic and scientific reasons;

7. *Urges* the Members of the United Nations or members of its related agencies, and the interested specialized agencies to continue to co-operate with the International Union in this respect;

8. *Recommends* that the Secretary-General, Governments of Member States and the International Union take the steps necessary to bring this report, together with part II of it, to the attention of the proposed World Conference on National Parks to be convened in 1962 by the Union.

1141st plenary meeting, 24 April 1961

Resolution 1831 (XVII): Economic development and the conservation of nature.

The General Assembly,

Noting steps taken by the Economic and Social Council in its resolution 810 (XXXI) of 24 April 1961, particularly as they affect national parks and equivalent reserves, and the Council's request, in its resolution 910 (XXXIV) of 2 August 1962, for a study of measures proposed for the conservation and amelioration of natural environments,

Noting with satisfaction the initiative taken by the United Nations Educational, Scientific and Cultural Organization in the field of the conservation of nature, in the resolution adopted by its General Conference in 1962, and in particular the opinion expressed by that Organization that, to be effective, measures to preserve natural resources, flora and fauna should be taken at the earliest possible moment simultaneously with economic development, including industrialization and urbanization,

Considering that natural resources, flora and fauna may be of considerable importance to the further economic development of countries and of benefit to their populations,

Conscious of the extent to which the economic development of the developing countries may jeopardize their natural resources and their flora and fauna, which in some cases may be irreplaceable if such development takes place without due attention to their conservation and restoration,

1. Endorses the decision taken by the United Nations Educational, Scientific and Cultural Organization in the above-mentioned resolution and expresses the hope that early action will be taken, especially in the developing countries, along the lines set out in that resolution which, in paragraph 1, recommends measures directed towards:

   a. Preserving, restoring, enriching and making rational use of natural resources and increasing productivity;

   b. Assisting the International Union for the Conservation of Nature and Natural Resources and international organizations with similar aims;

   c. Observing existing international conventions and treaties on the preservation of the world's flora and fauna;

   d. Facilitating the exchange of information and of scientists and specialists in this field;

e. Introducing effective domestic legislation directed at eliminating the wasteful exploitation of soil, rivers and flora and fauna, while taking appropriate steps to prevent the pollution of natural resources and to protect landscapes, and also devising and implementing a suitable educational programme at all levels;

f. Organizing national campaigns through educational institutions and through the press, radio, television and all other possible media for the dissemination of information, in order to secure the co-operation of the population in the achievement of these aims;

g. Associating all interested ministerial departments in this effort to protect flora and fauna;

2. Calls upon the Secretary-General, the specialized agencies and other interested international and national organizations, in support of the above-mentioned resolution of the United Nations Educational, Scientific and Cultural Organization, to continue to provide technical assistance to the developing countries, at their request, in the conservation and restoration of their natural resources and their flora and fauna.

1197th plenary meeting, 18 December 1962

Annex 2: Regional divisions used in the report

ABNJ: Area beyond National Jurisdiction.

Africa: Angola, Benin, Burundi, Burkina Faso, Central African Republic, Côte d'Ivoire, Cameroon, The Democratic Republic of the Congo, Congo, Comoros, Cape Verde, Djibouti, Algeria, Egypt, Eritrea, Kingdom of eSwatini, Ethiopia, Gabon, Ghana, Guinea, Gambia, Guinea Bissau, Equatorial Guinea, Kenya, Liberia, Libya, Lesotho, Morocco, Madagascar, Mali, Mozambique, Mauritania, Mauritius, Malawi, Mayotte, Namibia, Niger, Nigeria, Reunion, Rwanda, Sudan, Senegal, Sierra Leone, Somalia, South Sudan, Sao Tome and Principe, Seychelles, Chad, Togo, Tunisia, Tanzania, Uganda, South Africa, Zambia, Zimbabwe.

Asia: Afghanistan, Bangladesh, Brunei Darussalam, Bhutan, China, Indonesia, India, British Indian Overseas Territories, Japan, Kazakhstan, Kyrgyzstan, Cambodia, Republic of Korea, Laos, Sri Lanka, Maldives, Myanmar, Mongolia, Malaysia, Nepal, Pakistan, Philippines, The Democratic People's Republic of Korea, Singapore, Thailand, Tajikistan, Turkmenistan, Timor-Leste, Uzbekistan, Vietnam.

Caribbean: Aruba, Anguilla, Antigua and Barbuda, Bonaire, Bahamas, Saint Barthelemy, Bermuda, Barbados, Cuba, Curacao, Cayman Islands, Dominica, Dominican Republic, Guadeloupe, Grenada, Haiti, Jamaica, Montserrat, Martinique, Puerto Rico, Saba, Saint Kitts and Nevis, Saint Lucia, Saint Martin, Sint Eustatius Sint Marteen, Turks and Caicos Islands, Trinidad and Tobago, Saint Vincent and the Grenadines, Virgin British Islands, US Virgin Islands.

Central America: Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, El Salvador.

Europe: Albania, Andorra, Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Bosnia and Herzegovina, Belarus, Switzerland, Cyprus, Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, Faroe Islands, Great Britain, Georgia, Gibraltar, Greece, Croatia, Hungary, Ireland, Iceland, Italy, Jersey, Liechtenstein, Lithuania, Luxembourg, Latvia, Monaco, Republic of Moldova, Former Yugoslav Republic of Macedonia, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Svalbard and Jan Mayen, San Marino, Serbia, Slovakia, Slovenia, Sweden, Turkey, Ukraine, Vatican.

Middle East: United Arab Emirates, Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Yemen.

North America: Canada, Greenland, Mexico, Saint Pierre et Miquelon, United States of America.

Oceania: American Samoa, Australia, Cocos Islands, Cook Islands, Christmas Island, Fiji, Federated States of Micronesia, Guam, Kiribati, Marshall Islands, Niue, Nauru, New Zealand, Pitcairn, Palau, Papua New Guinea, French Polynesia, Solomon Islands, Tokelau, Tonga, Tuvalu, United States Minor Outlying Islands, Vanuatu, Wallis and Futuna, Samoa.

South America: Argentina, Bolivia, Brazil, Chile, Columbia, Ecuador, French Guiana, Guyana, Peru, Paraguay, Suriname, Uruguay, Venezuela.

Southern Oceans: Antarctic, French Southern Territories, Bouvet Island, Falkland Islands, Heard Island and McDonald Islands, South Georgia and South Sandwich Islands, Saint Helena.

References

Bingham H., Fitzsimons J.A., Redford K.H., Brent A. M., Bezaury-Creel J., and Cumming T. L. 2017: Privately protected areas: advances and challenges in guidance, policy and documentation. Parks (23)1.

Borrini-Feyerabend G., Dudley N., Jaeger T., Lassen B., Pathak Broome N., Phillips A. and Sandwith T. 2013: Governance of protected areas: from understanding to action. Best practice protected area guidelines series No. 20, Gland, Switzerland: IUCN. Xvi+124pp.

Chape S., Blyth S., Fish P., Fox P. and Spalding M. 2003: 2003 United Nations List of Protected Areas. IUCN Gland, Switzerland and Cambridge, UK and UNEP-WCMC, Cambridge UK. ix+44pp.

Corrigan C., Bingham H., Pathak Broome N., Hay-Edie T., Tabanao G., and Kingston N. 2016: Documenting local contributions to Earth's biodiversity heritage: The Global registry. Parks, (22)2.

Deguignet M., Juffe-Bignoli D., Harrison J., MacSharry B., Burgess N., and Kingston N. 2014: 2014 United Nations List of Protected Areas. UNEP-WCMC, Cambridge UK.

Deguignet M., Arnell A., Juffe-Bignoli D., Shi Y., Bingham H., MacSharry B., and Kingston N. 2017: Measuring the extent of overlaps in protected area designations. PLOSone: https://doi.org/10.1371/journal.pone.0188681.

Dudley N. (Editor) 2008: Guidelines for applying protected area management categories. Gland, Switzerland: IUCN, x+86pp.

Ervin, J. 2003: Rapid Assessment of Protected Area Management Effectiveness in Four Countries. BioScience, 53(9), p.833.

Geldmann, J., Coad, L., Barnes, M., Craigie, I. D., Hockings, M., Knights, K., Leverington K., Cuadros Ivon C., Zamora C., Woodley S., and Burgess, N. D. 2015: Changes in protected area management effectiveness over time: A global analysis. Biological Conservation, 191, 692–699.

Hocking, M., Stolton, S. and Dudley, N. 2000: Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK. x + 121pp.

Hockings, M., Stolton, S., Leverington, F., Dudley, N. and J. Courrau. 2006: Evaluating Effectiveness: A framework for assessing management effectiveness of protected areas. 2nd edition. IUCN, Gland, Switzerland and Cambridge, UK.

Hockings, M., James, R., Stolton, S., Dudley, N., Mathur, V., Makombo, J., Courrau., J. and J. Parrish. 2008: Enhancing our Heritage Toolkit: Assessing management effectiveness of natural World Heritage sites. UNESCO, World Heritage Centre, Paris, France.

IUCN and World Commission on Protected Areas (WCPA). 2017: IUCN Green List of Protected and Conserved Areas: Standard, Version 1.1. Gland, Switzerland: IUCN

Jameson, S.C., Tupper, M.H., and Ridley, J.M. 2002: 'The three screen doors: can marine "protected" areas be effective?'. *Marine Pollution Bulletin*, 44(11): pp. 1177-1183.

Leverington et al., 2008: 'Management Effectiveness evaluation in protected areas – a global study. Supplementary Report No1: Overview of approaches and methodologies.' The University of Queensland, Gatton, TNC, WWF, IUCNWCPA, Australia.

Lham, D., Wangchuk, S., Stolton, S., & Dudley, N. 2018. Assessing the effectiveness of a protected area network: A case study of Bhutan. *Oryx*, 1-8. doi:10.1017/S0030605317001508.

Lopoukhine N. and Ferreira de Souza Dias F. 2012: 'What does Aichi Target 11 really means?' Parks 18:5-8.

Paolini, C., Rakotobe, D. and D. Jomha Djossi. 2016: Coach Observatory Mission Information Toolkit (COMIT): A toolkit to support coaching missions to improve protected area management and develop the information system of the Biodiversity and Protected Areas Management (BIOPAMA) Programme. IUCN, Gland, Switzerland.

Pomeroy, R.S., Parks, J.E. and Watson, L.M. 2004: 'How is your MPA doing? A guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness'. IUCN, Gland Switzerland and Cambridge, UK.

Pomeroy, R.S., Watson, L.M. Parks, J.E. and Gonzalo, A.C. 2005: 'How is your MPA doing? A methodology for evaluating the management effectiveness of marine protected areas'. *Ocean & Coastal Management*, 48: pp. 485-502.

Salafsky, N., R. Margoluis, and K. H. Redford 2001: 'Adaptive management: a tool for conservation practitioners'. Biodiversity Support Program, Washington, D.C.

Stolton, S. & Dudley, N. 2016: *METT Handbook: A guide to using the Management Effectiveness Tracking Tool (METT)*, WWF-UK, Woking.

UNEP-WCMC 2018: Protected Planet: The Global Database on Protected Area Management Effectiveness (GD-PAME) Statistics. Cambridge, UK.

Zazanashvili, Nugzar & Dzneladze, Malkhaz & Belokurov, Alexander. 2003: Georgia, 2003: Management effectiveness assessment of Protected Areas using WWF's RAPPAM methodology.