

INTRODUCTION

The UNESCO General Conference, at its 28th session, adopted Resolution 28 C/2.4 on the Statutory Framework of the World Network of Biosphere Reserves. This text defines in particular the criteria for an area to be qualified for designation as a biosphere reserve (Article 4). In addition, Article 9 foresees a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4 and forwarded to the secretariat by the State concerned. The text of the Statutory Framework is given in the third annex.

The form which follows is provided to help States to prepare their national reports in accordance with Article 9 and to update the data available to the Secretariat on the biosphere reserve concerned. This report should enable the International Coordinating Council (ICC) of the MAB Programme to review how each biosphere reserve is fulfilling the criteria of Article 4 of the Statutory Framework and in particular the three functions. It should be noted that it is requested, in the last part of the form (Criteria and Progress Made), to indicate how the biosphere reserve fulfills each of these criteria.

The information presented on this periodic review will be used in a number of ways by UNESCO:

- (a) for examination of the biosphere reserve by the International Advisory Committee for Biosphere Reserves and by the Bureau of the MAB International Coordinating Council;
- (b) for use in a world-wide accessible information system, notably for the UNESCO-MABnet and publications, facilitating communication and interaction amongst persons interested in biosphere reserves throughout the world.

Kindly indicate if any part of this report should remain confidential.

The form consists of three parts:

- Part one is a summary highlighting the main changes in the biosphere reserve during the reporting period.
- Part two is more descriptive and detailed, referring to the human, physical and biological characteristics as well as to the institutional aspects.
- Part three consists of two Annexes (A): the first Annex (A.1) will be used to update the directory of biosphere reserves on the MABnet. The second annex will be used to provide promotion and communication materials of the biosphere reserve (A.2).

The third annex comprises the Statutory Framework for the World Network of Biosphere Reserves.

Please provide as many quantitative data as possible as well as supporting documentation to complete the information provided, especially:

- Map(s) clearly showing the zonation (see in particular 2.3.1);
- The legal texts for the different zones.

The form should be completed in English, French or Spanish. Two copies should be sent to the Secretariat, as follows:

1. The original hard copy, with the original signatures, letters of endorsement, zonation map and supporting documents. This should be sent to the Secretariat through the Official UNESCO channels, i.e. via the National Commission for UNESCO and/or the Permanent Delegation to UNESCO.
2. An electronic version (on diskette, CD, etc.) of the periodic review form and of maps (especially the zonation map). This can be sent directly to the MAB Secretariat:

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PART I: SUMMARY

- iv. Name of the biosphere reserve: Sinharaja Biosphere Reserve
- v. Country: Sri Lanka
- vi. Year of designation: 1978
- vii. Year(s) of periodic review(s): 2003
- viii. Previous recommendation(s) made by the International Co-ordinating Council (MAB- ICC), if applicable:
 - i. The extension of the participatory management model to new areas in the southern buffer zone;
 - ii. The integration of large plantations (both private and state owned) into the participatory management process;
 - iii. The regular evaluation of the participatory management process with the possible creation of an award for the community based organizations which contributed to forest management, and increasing of their entrepreneurial development;
 - iv. The dissemination of results of pilot studies;
 - v. The focus on ecotourism to be promoted;
 - vi. A better understanding between researchers and the Biosphere Reserve staff.

Further the Advisory Committee recommended that the Sri Lankan authorities:

- i. Be commended on the way the periodic review had been conducted in association with local stakeholders;
 - ii. Take into consideration the detailed recommendations which were made during the national periodic review process;
 - iii. Revise the zonation, considering the possibility of including the adjacent Handapanella Plains within the Biosphere Reserve to enhance biodiversity conservation, as recommended by field biologists during this review and establishing a transition area;
 - iv. Provide an updated map, and rename the zones according to the International Biosphere Reserves criteria;
 - v. Encourage and strengthen cooperation within sub-regional and World networks and with the KDN future biosphere reserve (in the process of designation).
- ix. What follow-up actions are completed and if not completed/initiated, please provide justifications.

Recommendations	Progress
I. The extension of the participatory management model to new areas in the southern buffer zone	The project to establish this participatory model ¹ via the South West Rainforest Participatory Project, was in operation from July 2000 to December 2007 by the Forest Department (FD), but though a project proposal was prepared for World Bank funding to extend it to 2 villages at the southwestern end, funds could not be accessed. However, extension of the model to the northern boundary where it is now most wanted is proceeding. A CBO is being established in the

¹ i.e. the model developed through the “Contributing to the Conservation of the Unique Biodiversity in the Threatened Rain Forests of Southwest Sri Lanka (GEF ID 818)” carried out by the Forest Department from 2000-2007; generally referred to (as in this report) as the South West Rainforest Participatory Project.

Recommendations	Progress
	<p>Kudawa area on the northern border and the field staff are exploring the possibility of extending it to one other GN division.² More important is the fact that the concept of working with communities by the Forest Department has become entrenched in the work ethic of the Department - so that all engagement with local people is now to varying degrees influenced by this model. The areas where introduction of this model around the SBR is most needed would be investigated and action taken in the future.</p> <p>(Also see section iv below: dissemination of results for application of this model in other areas of Sri Lanka).</p>
<p>II. The integration of large plantations (both private and state owned) into the participatory management process</p>	<p>This has now being initiated. All large plantation owners in the TZ of the Sinharaja and KDN BRs were consulted via a special meeting for the private sector to formulate a mechanism for their engagement (Annex 1). It was recommended that representatives of the plantation sector within the TZ should be members of the Sinharaja BR Coordinating Committee convened by the FD. This was accepted by the FD and will be followed up.</p>
<p>III. The regular evaluation of the participatory management process with the possible creation of an award for the community based organizations which contributed to forest management, and increasing of their entrepreneurial development</p>	<p>Regular evaluation Through the Periodic Review, the National MAB Committee of the NSF evaluated the status of the community participation initiative established under the South West Rainforest Participatory Project in the TZ of the Sinharaja BR (and other such projects at the other three International Biosphere Reserves). This resulted in identification of strengths and weaknesses of the Sinharaja CBOs and ways to further strengthen them for their long-term effectiveness. Some weaknesses that were identified have already been addressed (See section 5.0 below), others are being followed up by the FD.</p> <p>The concomitant 2013 GEF Country Portfolio Evaluation in Sri Lanka carried out an independent survey³ of the current status of community participation established under the Global Environmental Facility (GEF) funded South West Rainforest Participatory Project. As the lead consultant for the Sinharaja Periodic review was also a member of the GEF review team, the Periodic Review used these findings (with permission) for initial evaluation of the community participation initiative. The MAB Periodic Review followed-up with an independent socio-economic review of communities in the BZ through householder interviews and focus group discussions in the TZ which was shared with the GEF Portfolio Evaluation exercise. This helped to maximize time and effort of communities consulted, and helped to probe and validate the initial findings of the GEF review by the PR team. Both evaluations were used to demarcate the Transition Zone (TZ) for the Sinharaja BR.</p> <p>The South West Rainforest Participatory Project and CBO activities have also been evaluated and assessed through the mid term review and terminal evaluation of the project by GOSL, GEF & UNDP (Rogers</p>

² i.e. *Grama Niladhri* Divisions are the smallest administrative units at village level which are linked directly to Divisional Secretariats and via those to the District Administration (District Secretariat) under which the Divisional Secretariat is placed.

³ Survey carried out by the Centre for Poverty Analysis on behalf of the Global Environmental Facility.

Recommendations	Progress
	<p>& Abeywardana, 2007).</p> <p>Award scheme</p> <p>Detailed evaluation of the role of Sinharaja CBOs in promoting participatory forest management has been carried out during the parallel BR strengthening process which occurred with this PR. Measures to help these CBOs (set up through the South West Rainforest Participatory Project) were initiated through meetings with the private (i.e. workshop 3) and public sector (District and Divisional Administration) to ensure their long-term continuity in the future and for entrepreneurial development. The formation of a sub-committee for each IBR is being discussed by the National MAB Committee to track progress of the three functions of BRs, including the role of CBOs in demonstrating sustainable development.</p> <p><i>The award scheme will be initiated after such background mechanisms are in place.</i></p> <p>Entrepreneurial development</p> <p>Measures for entrepreneurial development for the CBOs have been explored (see award scheme above) and are explained in section 5.0 (development)</p>
(IV) The dissemination of results of pilot studies	<p>The results of pilot tested Community Participation model from the South West Rainforest Participatory Project</p> <p>This model was used very successfully in the GEF/ADB/GON⁴ funded Protected Area Management and Wildlife Conservation (PAM&WC) by the Department of Wildlife Conservation (DWLC) Project in seven wildlife protected areas (including the Bundala BR). It was also viewed and adapted by the FD in the Sri Lanka Australia Natural Resources Management Project (SLANRMP) with modifications to suit other climatic regions of Sri Lanka (the second phase of this project has commenced). In Sri Lanka, wildlife reserves are managed by the DWLC while forest reserves are managed by the FD. So intra- and inter departmental transmission has occurred. However, the inter-departmental transfer occurred informally as the same Forest Department officer in charge of the rainforest GEF project was also in charge of the PAM&WC project.</p> <p>The need for a more formal means of sharing the results of the pilot study with the district administration was perceived during meetings held for this review. This was initiated at the meeting with the Agriculture Committee of the Galle District (see Annex 1). More such information sharing was requested by the Divisional Administration at this meeting. <i>This is being followed up by the MAB Committee and FD.</i></p> <p>The research on under-planting in <i>Pinus</i> stands</p> <p>Following the pilot study at Sinharaja for under-planting <i>Pinus</i> with indigenous species (including those of commercial value), trials were established for rattan (<i>Calamus</i>) in the three climatic zones, at</p>

⁴ Global Environmental Facility/Asian Development Bank/Government of the Netherlands

Recommendations	Progress
	Kirindiwela, Gampaha, Ingiriya and Kalutara in the wet zone; at Kurunegala in the intermediate zone; and at Minneriya and Habarana in the dry zone. These trials showed that rattan is most successful under <i>Pinus</i> , also that a successful rattan plantation can be harvested within 9-10 years. ⁵
(V) The focus on ecotourism to be promoted	<p>The Kudawa Conservation Centre (KCC) is being renovated to provide better visitor facilities, and the Pitadeniya Conservation Centre (PCC) has also been expanded to cater to ecotourists (See section 6 below). The KCC is working to upgrade its visitor facilities for ecotourism and to cater to foreign ecotourists (as well as local ecotourists) in the future. This is proceeding very satisfactorily.</p> <p>A project aimed at enhancing ecotourism at Morningside, Sinharaja, was stalled due to lack of funds, but the department acknowledges the need to upgrade visitor accommodation (FD/MoENR, 2009). To address this need and to explore private sector assistance to facilitate ecotourism in all four BRs, the National MAB Committee sought to facilitate private sector partnerships, with special reference to ecotourism (and CBO entrepreneurial development) at a meeting held with the private sector (also attended by the Sri Lanka Tourism Development Authority). This resulted in a very positive request for a follow-up workshop to be jointly organized by the private sector and the MAB Committee in 2014 to promote the required partnerships.</p> <p>Meetings held during the review with the District Secretariats of Galle and Matara have also helped position the Sinharaja BR as a prime ecotourism destination which can be factored into district economic development plans and projects. More meetings to follow-this up are expected in 2014 and 2015.</p> <p>It is expected that potential for enhancement of ecotourism at the KCC, PCC and especially the Morningside Bungalow, will be further explored through these various mechanisms by the FD supported by the National MAB Committee.</p>
VI. A better understanding between researchers and the Biosphere Reserve staff	The FD now sends the research proposals approved by the Forest Department Research Committee to FD field staff at the SBR for their information. The field staff at Kudawa are also planning a research day for presentation of research by field researchers in the SBR to the FD staff and communities during the 3 rd week of March [This is in their work plans in 2014, and funds reach them around March].
Other:	
Ib. Provide an updated map, and rename the zones according to the International Biosphere Reserves criteria	This has been done and the maps were submitted to UNESCO. The new TZ for Sinharaja is marked in it. The TZ comprises areas where (a) CBOs set up through the Global Environmental Facility (GEF) funded South West Rainforest Participatory Project have been active and there is demonstrated integration of conservation and sustainable development, (b) areas along the northern boundary where this model is to be applied, and (c) there are large tea plantations bordering the forest that will be working as stakeholders in the SBR. All stakeholders (FD, communities, planters, district administration) were consulted when formulating the TZ.

⁵ Source: Deepani Alawathugoda, Forest Department Research Station data.

Recommendations	Progress
<p>IIb. Encourage and strengthen cooperation within sub-regional and World networks and with the KDN future biosphere reserve (in the process of designation).</p>	<p>The SBR continues to be associated with the Long-term Forest Dynamics Programme across the tropics launched by the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute. Hence it is one of several sites worldwide, in which other BRs are also represented.</p> <p>The GEF South West Rainforest Participatory Project covered the Sinharaja and KDN IBRs which involved cooperation between the reserves for progress review, lessons learnt and addressing problems. Progress tracking of the SBR and KDN BR also occur within the FD internal coordination structure.</p>

Other recommendations of ICC

Recommendation	Progress made
<p>Take into consideration the detailed recommendations which were made during the national periodic review process</p>	<p>The detailed recommendations provided in the 2003 Periodic Review of the SBR, their current status of implementation and how they can be implemented (if not implemented previously) were discussed in detail at the workshop for BR managers (held in Kandy Sri Lanka) by the National MAB Committee. Other BR managers also looked at ways in which the recommendations could be applied to their BRs.</p> <p>The status of implementation of the 2003 recommendations for the SBR are given below:</p>
<p>(a) Formulate a mechanism for a strong facilitating and monitoring role for the Forest Department after the S/W Rainforest Conservation Project ceases</p>	<p>While the FD had to move out of a dominant role at the end of this project due to the nature of the model that was being tested, the need for a strong presence is now accepted. As such, the FD extension staff attend monthly CBO meetings. The Sinharaja Management Plan of 2009 accepts that the FD should also be in a position to provide more inputs to the CBOs such as training, linkages with markets or other government departments to maintain the relevance of the community-FD linkage that was formed, particularly as CBO members are no longer dependent on the forest for their incomes (see also results of consultations during the PR below).</p> <p>To assist, the National MAB Committee in collaboration with the FD are seeking to identify ways of strengthening the CBOs in the TZ by providing product marketing channels (via the private sector) and training (by the state sector) to the CBOs, support the present economic development activities (mainly tea) and to provide other entrepreneurial opportunities including ecotourism (see section 5).</p> <p>Meetings have also been held by the review team, NSF staff, and FD field staff, with district administration (via the District Agriculture Committees) on how district economic development and agricultural support can be provided to the CBOs in the SBR. The first meetings were held in Galle and Matara (Annex 1), and more were requested.</p>
<p>(b) Actively promote the formation of Vigilance Committees within all CBOs</p>	<p>Evaluation of CBO activities (through both the GEF Portfolio evaluation and meetings for the MAB review) showed that although there are no formal vigilance committees, the CBO members (both active and non-active) act in this manner (in secret) so that FD field staff are apprised of any illegal activities in the reserve. If no action is taken, they contact the higher officers of the FD at district or even Headquarters level. This was shown to be clearly a result of the CBO operations emanating from the GEF rainforest project, partly due to the benefits they received from the project and partly due to the</p>

Recommendation	Progress made
	intense awareness activities that were carried out. This mechanism is functioning well. It was also said that a formal Vigilance Committee can be problematic as the informants would then be known and this would create difficulties in the closely knit societies that exist in the Sinharaja BR. The Review Team Agrees with this logic.
(c) Enhance capacity of CBOs to undertake entrepreneurial development.	<p>This has been well pursued by the FD though the South West Rainforest Participatory Project (see section 5 below). It will also be facilitated by the linkages sought with the private and public sector for entrepreneurial development, to be continued in 2014 and 2015. It is also recommended in the Sinharaja Management Plan of 2009.</p> <p>Also more work on this aspect has been done under the Sri Lanka-Australia Natural Resources Management Project (SLANRMP) which followed the GEF project at the SBR and KDN BR. The Micro-enterprise development strategy tested through the SLANRMP can be applied to some extent for entrepreneurial development in the SBR, taking into consideration that the local people in the SBR TZ are mainly concerned with tea cultivation as their main income earner.</p>
(d) Identify material that is most often obtained from the forest through the CBOs and initiate programmes for their propagation in home gardens	This has been done to some extent as is possible in areas where tea cultivation is prevalent. The Forest Department has provided many tree species for home gardens, including fruit and timber species through the South West Rainforest Participatory Project. The Communities continue to obtain significant economic benefit from the fruit trees so provided.
(e) Explore the need and potential to propagate kitul in the buffer zone	It is believed that there are sufficient kitul trees for tapping at the TZ in Kudawa where kitul tapping is still an important activity. ⁶ What is needed now is a marketing mechanism for sale of quality certified Kitul treacle and jaggery (a candy like sweetener from the kitul sap). Talks have been initiated by the KCC with a supermarket chain in Sri Lanka for kitul products, and it is engaged in obtaining information on the potential for product delivery in terms of kitul trees available for tapping in the Kudawa GN Division. At the southern boundary, however, young people are moving away from this tradition (tree climbing) with enhanced education and socio-economic levels of local communities. Promoting kitul tapping in this region needs innovative means of tapping and incentives that could be explored with the private sector.
(f) Assess sustainable harvest rates of rattan and other species propagated through pilot studies for under-planting <i>Pinus</i> in the buffer zone	This has been done. Studies have shown that a successful rattan plantation can be harvested within 9-10 years. Trials in different climatic zones show that well maintained 100 rattan clumps can yield on average 100 mature stems of 15-20 m length within 10 years, and can be re-harvested within 2-3 years. ⁷
(g) Promote inter-institutional collaboration with the Plant Genetic Resources Centre for <i>ex-situ</i> conservation of the reserve's genetic resources	The Director of the PGRC was absorbed into the National MAB Committee for this purpose following the 2003 Periodic Review. After he retired, there is no formal mechanism for collaboration at present, but the PGRC makes collections from the BZ and TZ of the SBR as per their institutional work plans.
(h) Instigate measures to disseminate results of pilot studies that have been	This has been initiated with the meeting at the Galle District Secretariat via the District Agricultural Committee (Annex 1) where the BR functions and concepts and the model piloted by the South

⁶ Source: Forester in charge of the Kudawa Conservation Centre.

⁷ Source: Deepani Alawathugoda, Forest Department Research Station data.

Recommendation	Progress made
carried out in the reserve to other state institutions outside the forestry sector.	<p>West Rainforest Programme were showcased. This needs to be followed-up by the FD and the National MAB Committee.</p> <p>However, results have been disseminated within the FD to other forest sites, and to sites managed by the DWLC (including the TZ of the BBR and HBR).</p>
(i) Give consideration to developing the Sinharaja Biosphere Reserve as a site to promote traditional practices that are dying out in the buffer zone	<p>Not achieved as yet, but it is recommended in the Sinharaja Management Plan (FD/MoENR, 2009).</p> <p>The potential to do so with regard to showcasing traditional drumming and practice of traditional medicine (for humans and animals) at the Pitadeniya Conservation Centre was discussed at the Kandy Workshop for Biosphere Reserve Managers and at Community meetings during this review. The potential for promoting forest based customs and practices is recognized in the Sinharaja Management Plan of 2009.</p> <p>Demonstration of kitul tapping and making of treacle and jaggery will be pursued by the Kudawa Conservation Centre.</p>
(j) Facilitate formation of CBOs and social mobilisation in the villages north of Kosmulla up to Pitakale.	<p>See (l) above. CBO formation at the Kudawa <i>Grama Niladhari</i> Division at the northern boundary (within the mentioned range) is in progress. Potential for CBO formation at Illumbakanda (outside this range, but considered important) is also being explored by the FD.</p> <p>The area immediately north of Kosmulla has to be investigated to see whether there is a need and scope for CBO establishment now.</p>
(k) Organise for forest guides at Pitadeniya to work with their Kudawa counterparts at Kudawa on a rotational basis.	<p>Not done yet, but this was discussed at the BR managers' workshop in Kandy as an activity that would be pursued in 2014. There was agreement by the KCC that the PCC guides can be brought over for training.</p>
(l) Concentrate on ecotourism at the Morningside Conservation Centre	<p>At present the Morningside Conservation Centre functions only as a circuit bungalow and has basic facilities for visitors. It also has an extremely poor access road needing a 4 wheel drive through a private plantation. Upgrading facilities for ecotourism is recognized in the Sinharaja Management plan of 2009. Getting public/private sector assistance to upgrade facilities will be explored at the next private sector workshop in 2014 (See section V above). The KCC is also exploring the prospect of opening a visitor trail from the northern boundary to the Morningside bungalow which will also promote employment for local guides and enhance tourism at the northern boundary of the SBR.</p>
(m) Facilitate a mechanism for sponsorship among the private sector to enhance facilities at the three conservation centres.	<p>See item (V) and (l) above. This was discussed positively at the private sector meeting during this review and will be taken up at the private sector workshop to be organized in 2014.</p>
(n) Seek funds for enhancing and expanding facilities at the research centre and for its maintenance.	<p>This has been done. Funds for re-building the dilapidated kitchen and dining hall at the research centre were provided by the National Science Foundation, Sri Lanka. The research centre has been maintained provides good facilities for about 6 researchers at a given time. The FD staff in charge of the research centre have had discussions with Biolan Finland to set up test composting toilets at this site. The outcome depends on whether Biolan decides to set up operations in Sri Lanka.</p>

Recommendation	Progress made
(o) Enhancing conservation and management	<p>Recommendations 20-25 under this title have been addressed. The boundary re-definition of the Sinharaja forest has been carried out (in most areas) using a participatory process through the action of CBO members; revised maps of the Sinharaja BR have been prepared with the new zonation and inclusion of a TZ; contiguous forests have been added to the BZ which provides better refuge for macrofauna; entrance to the <i>Duwilli ella</i> waterfalls near Kosmulla is now managed via a ticket counter by the Kosmulla Local Authority so that unauthorized access is precluded; hunting appears to have decreased on the southern boundary as gathered from discussions with local people; a Forest Department barrier has been opened at the southern boundary at the <i>Brahmana Ella</i> water falls in Lankagama.</p>
(p) Revise the zonation, considering the possibility of including the adjacent Handapanella Plains within the Biosphere Reserve to enhance biodiversity conservation, as recommended by field biologists during this review and establishing a transition area.	<p>This recommendation has been acted on. The Zonation has been completely revised. The maps have been sent to UNESCO.</p> <p>The Handapanella Plains is included in the area now being surveyed for acquisition by the FD. This will form part of the BZ of the Sinharaja BR depicted in the revised map. The Land Reform Commission (LRC) which manages these lands at present was notified of proposed land acquisition since the 2003 periodic review, and they have recently agreed to hand over these areas. The transfer of ownership of these areas to the Forest Department for inclusion in the Sinharaja BR has taken a long time due to the presence of some private lands in these areas and the need to adhere to government procedures that apply for acquisition of such lands. At present the survey process is continuing to record the exact boundary points and land extent for acquisition by gazette notification. This takes time as it has to be done by the Survey Department and access to some boundary points is difficult due to the terrain. The exact area to be acquired will only be known once the survey is complete, but it is approximately 4000 ha.</p> <p>This area consists of good regenerating forest and was included in the BZ of the SBR during zonation re-definition.</p>
(q) Investigate the reports of the rise in invasive species (e.g. <i>Alstonia</i> and <i>Clidemia</i>) in the reserve by researchers and communities.	<p><i>Clidemia</i> has not become a major problem as the canopy is closing in previously logged areas and this requires an opening in the canopy.⁸ However, future <i>Alstonia</i> invasion has been identified as a threat, and is already seen in the periphery of the Sinharaja forest. Ring barking is being trialed in the Ratnapura district (outside the reserve) as a means of eliminating it.⁹</p>
(r) Organise a seminar on the Sinharaja forest to showcase it as a biosphere reserve by demonstrating its conservation, development and logistic functions preferably at one of the conservation centres. This can also be used to identify how best to	<p>Several meetings (see Annex 1) were organized in association with the Periodic Review for BR managers, regional/district administrators and officials, plantation sector, other private sector and local communities in 2013 to make them more aware of the functions and potential of Biosphere Reserves through presentations. Film clips on Biosphere Reserves in other countries (examples from UK, Canada and Sweden) were used.</p> <p>Showcasing participatory management with local communities in the Sinharaja and KDN BRS commenced with the Agricultural Committee for the Galle District. There were requests from the audience for</p>

⁸ Source: Discussion with Forester at KCC and Experts' Workshop for this review.

⁹ Source: Divisional Forest Officer, Ratnapura

Recommendation	Progress made
enhance the role of this forest as an IBR and to address the gaps perceived through the review process.	<p>more information sharing programmes of this nature in 2014 and 2015 at the Divisional Administration levels.</p> <p>The private sector workshop scheduled for 2014 is expected to showcase all 4 BRs in Sri Lanka.</p>

x.Update on the implementation of measures to achieve the objectives of the biosphere reserve.

Conservation and management:

1. Preparation of the 2009 Management Plan for the CZ and sections of the BZ (now in new TZ) which addresses participatory conservation of the CZ with local people in parts of the BZ and TZ by the Forest Department and much of the management needs of a BR.
2. Participatory boundary marking in the Matara district¹⁰ and parts of the Galle⁹ and Ratnapura Districts under the Forestry Resources Management Project (FRMP) This has helped greatly to eliminate illegal tree felling in the CZ and encroachment for tea cultivation (note: *no natural forests are logged by the state in Sri Lanka*). Boundary marking with cement poles help preclude encroachment into the CZ as this can be easily detected and reported.
3. Redefinition of the zonation of the Sinharaja BR as per requirements of a UNESCO biosphere reserve in consultation with FD field staff, representatives of communities, planters and District and Divisional Administration in the Galle and Matara districts.
4. Review of potential to enhance the three functions of the Sinharaja MAB reserve and discussions with regional administration, communities and private sector in this regard.

Development function:

5. Successful model developed via the GEF funded project “Contributing to the Conservation of the Unique Biodiversity in the Threatened Rain Forests of Southwest Sri Lanka (GEF ID 818) for participatory conservation with local people and livelihood development for social upliftment. This has resulted in a major positive turnaround of relations between the Forest Department and local people in areas where the project was operational, and has significantly promoted engagement of local people in conservation through livelihood enhancement.
6. Links initiated with regional administration for better demonstration of development functions required of the newly demarcated TZ sharing of pilot studies in the BR.
7. Links initiated between BRs and large plantations in the SBR.
8. Exploration of potential for partnerships with the Private Sector initiated, and plans for follow-up action.

Logistic functions:

9. Enhancement of facilities at the Kudawa and Pitadeniya Conservation Centres for education and for visitor accommodation to facilitate ecotourism.
10. Renovation of the research station managed by the Kudawa Conservation Centre.
11. Continuation of valuable research at the SBR, some of which are long-time international collaborations.
12. A study to determine the changes in the biodiversity values of Southern Sinharaja and Kanneliya Forests after the implementation of GEF Rainforest Project

¹⁰ Done in collaboration with CBOs established under the South West Rainforest Participatory Project.

xi. Briefly describe the process by which the current periodic review has been conducted:

Strategy for the review

A lead consultant was appointed by the National MAB Committee for the review of the Sinharaja Biosphere Reserve (SBR), supported by a sociologist. A review strategy was formulated by the lead consultant for the Periodic Review of all Biosphere Reserves in Sri Lanka in November 2012 for the National MAB Committee of the National Science Foundation. The strategy included preparation of the Periodic Review Report as well as a parallel process by the National Man and the Biosphere Committee whereby the gaps identified during the review would be simultaneously addressed throughout 2013 by BR managers.

The lead consultant for this review was also the reviewer of the Sinharaja Biosphere reserve in 2003. This enabled comparison of the situation in 2003 and at present. The same consultant was also a member of the team carrying out a concurrent evaluation of the South West Rainforest Participatory Project for the Review of the GEF Portfolio in Sri Lanka via the Centre for Poverty Analysis (CEPA) on behalf of the Global Environmental Facility (GEF) which enabled sharing of information and precluded duplication of time and effort for the communities consulted for the same purpose, and also enabled a more detailed review for both processes.

The parallel process by the National MAB Committee identified areas that should be strengthened in the SBR to better demonstrate the BR concepts with regard to conservation, development and logistic functions. This included identifying institutional needs to improve facilities and processes to promote education, research and cultural heritage in the SBR, establish better coordination for reserve management among varied stakeholders, a revision of zonation, and a review of the existing management system.

Methods used:

A range of methods were used to maximise data collection and consultations during the Review with regard to time and funds. They included: (a) Desk review of relevant documents and documented data; (2) Institutional visits for individual interviews and group discussions with the Forest Department and administrative officers in district and divisional administration in the Ratnapura, Galle and Matara districts; (3) Field visits: (a) to the KCC (including the research station), PCC and Morningside, *Duvilli ella* and *Brahmana ella* for inspection of visitor and logistic facilities; (b) for discussions with FD Divisional Forest Officers and SBR field officers; (c) for community consultations through focus group discussions and household interviews; and (d) for discussions with hotels and guesthouse owners in the SBR; (4) Workshops and special meetings with stakeholders: BR managers, planters and other private sector representatives, key district administrators and other officials, and biodiversity experts; and (6) telephone interviews with some government officials who could not be reached during field visits. The number and nature of consultations are summarized in Table 1. The review team, mapping team and all persons consulted are in Annex 1.

Details of the Review (explained in detail under 1.5.2):

- **Desk review**

The review consultant carried out a desk review of all relevant documents (see details in section 1.5.2).

Summary of consultations is in Table 1.

- **Field visits**

Community consultation

- Several Focus Group discussions with communities, individual household interviews (N=80) to gather necessary socio-economic and land use data at grassroots level. The focus group discussions used 2 sets of questionnaires and two sets of indicators that were checked. The first set of indicators was used in connection with the GEF portfolio review (N=21). The second set of indicators was used at a final focus group meeting with 40 respondents. One questionnaire was used with 5 different small focus group meetings for 45 persons at different locations; and the second questionnaire was used for the household survey.

Inspections

- Visits to CZ, BZ and TZ for field checks on boundaries, contentions issues, follow-up from the 2003 periodic review, major land uses and issues relating to land use, and inspection of facilities at the KCC, PCC, Morningside bungalow, *Brahmana* ella and *Duwili* ella sites.

Meetings with field staff

- Meetings with FD field staff of the SBR at Kudawa Conservation Centre (KCC), Pitadeniya Conservation Centre (PCC), and Morningside.
- Meetings with FD staff at the Neluwa Range office (Galle), Divisional Forest Officers of Ratnapura, Galle and Matara, and Range Forest Officer at Agalawatte (Kalutara district).

• Workshops

- A workshop (in Kandy) for managers of all 4 BRs (including the SBR), the MAB Committee and review consultants to redefine the zonation of all 4 MAB reserves to make them more effective and for exchange of ideas among all BR managers.
- A workshop to initiate the preparation of education and communication strategies for all 4 IBRs.
- A workshop for biodiversity experts to complete section 4 of the PR form, and validate and update the latest species lists.

• Special meetings

- A special meeting with large plantation owners in the SBR TZ, other potential sector partners and state sector tourism officials.
- Meetings with the Galle and Matara District Secretaries and other relevant administrators to finalise zonation, engage their cooperation, and showcase the BR concepts and work of the SBR for community participation in conservation.
- Meeting with Forest Department Head quarters staff to finalize issues regarding the review report and mapping.

• Institutional interviews

- Individual institutional visits to the Forest Department (as required) and Ministry of Environment and Renewable Energy.

• Mapping

- A draft digitized SBR map (with the old zonation) was done by the Forest Department in consultation with the review consultant. Using this, the revised zonation was proposed at the BR managers workshop with FD staff, and finalized after discussion with communities in the TZ and administrators at regional level.
- The mapping involved verification with current land use maps, data obtained at grassroots level, focus group discussions, field visits, and 2012 national census data.¹¹

i). Area and spatial configuration:

Core Zone(CZ): During the recent participatory boundary re-definition of the Sinharaja National Heritage Wilderness Area (NHWA) through the Forestry Resources Management Project (FRMP), some old encroachments with housing and tea as well as traditional villages that were within the legal forest boundary were excluded and concrete boundary posts placed at the true forest boundary to prevent further encroachments. As such, in such areas, the CZ boundary lies outside the newly marked forest boundary. The FD now manages the forest within the boundary posts as their domain. However, these areas though excluded still remain within the legally gazetted boundary of the Sinharaja National Heritage Wilderness Area (NHWA) which constitutes the original CZ of the SBR.

¹¹ For all population related data in this report, there were a few instances where 2012 data were not available and hence 2011 census data had to be used. For estate data where only plantations were considered and not the rest of the GN division, population data were obtained from the plantation sector.

The need for redefinition of the Sinharaja NHPA is stated in the 2009 Sinharaja Management Plan (FD/MoERE, 2009, p17), but excluding areas of human use (estimated to be not more than 1% of the CZ) from the legally gazetted boundary requires the re-survey and re-opening of the old boundary which takes time and funds. This is something that the FD is considering for the future, at which time areas of high human use *will be excluded from the CZ and included in the TZ*. Until such time they will be conceptually managed as TZ, but considered within the CZ with regard to zonal area.¹²

The need for community participation to maintain the forest boundary and the need for incentives to sustain this link is recognised in the 2009 Sinharaja Management Plan. This review also found that community participation has been vital for boundary maintenance as confirmed in the areas where the South West Rainforest Project has been in operation.

On the other hand, based on agreements with local people during the participatory boundary marking (mainly along the southern boundary where the human population is greatest), newly encroached tea lands have been absorbed into the reserve, and are within the concrete marker boundary of the forest. The cultivators can harvest the tea for some time, but no further encroachments or damaging activities are allowed. The lands remain within the ownership and management authority of the FD.

	Previous report (nomination form or periodic review) and date	Proposed changes (if any)
Area of terrestrial Core Area(s)	11,187 ha (2003 review)	11427 ha. The area within the legal CZ boundary (i.e. the gazetted boundary of the Sinharaja National Heritage Wilderness Area (NHPA)) has remained the same. The increased extent is probably due to increased accuracy of measurement using GIS during the present mapping, while earlier area measurements were done manually. (See i above)
Area of terrestrial Buffer Zone(s)	Mapped, but area not measured.	16316 ha
Area of terrestrial Transition Area(s)	Not defined	2087 ha
Area of marine Core Area(s)	Absent	Absent
Area of marine Buffer Zone(s)	Absent	Absent
Size of marine Transition Area(s)	Absent	Absent

Previously (2003) the BZ was a uniform area around the CZ and included a large number of villages that have little to do now with the SBR. During the present boundary re-definition adjacent forests areas were included in the BZ, and areas where there was demonstrable sustainable development were included in the TZ.

¹² Discussions with the Conservator General of forests and other key staff in the FD.

j). Human population of the biosphere reserve:

The 2003 population estimates were based on available literature. As there was no administrative basis for the zonation, it was not possible at the time to relate census data (which are for *Grama Niladhari* Divisions) to the BZ which was conceptual. The present TZ and BZ are consonant with *Grama Niladhari* Divisions, making it possible to accurately obtain population data. The Present BZ covers both natural and planted forests managed by the FD. Except for a few temporary shelters interspersed with forest plantations at the northern boundary,¹³ and one village in a BZ forest, there can be no permanent settlements in the BZ.

	Previous report (nomination form or periodic review) and date	At present (please state date of census or other source)
Core Area(s) (permanent and seasonally)	Not provided. Only Forest Department staff and a few villages that were slated to be relocated.	1654 ¹⁴
Buffer Zone(s) (permanent and seasonally)	26,000 persons in 6,500 families living in about 40 villages (compared with 5,457 in 1980), with a range of 42-429 households in a village. ¹⁵	120 (FD field staff+ villages with temporary housing within the BZ)
Transition Area(s) (permanent and seasonally)	Not defined. The BZ villages are now in the TZ.	10800

k). Budget (main sources of funds, special capital funds) and international, regional or national relevant projects/initiatives carried out or planned.

Budget in the previous report (nomination form or periodic review) and date	Current budget
Not available as it was not sought in the 2003 review	<p>Approximately US\$ 44760 on average per year (using 2011-2013 data) without staff salaries which amount to about US \$ 59775 per year. (Total approx: US \$ 1,00,500 per year).</p> <p>In addition there are payments to temporary staff and project funds such as the US\$ 975,713 for the South West Rainforest Participatory Project (GEF financing of US\$ 749,713 and US\$ 226,000 in co-financing from the Sri Lankan government) over the project duration for both Sinharaja and KDN BRs.</p> <p><i>Source: GEF Portfolio review, CEPA.</i></p>

l). International, regional, multilateral or bilateral framework of cooperation. Describe, where applicable, the contribution of the biosphere reserve to achieve

¹³ Source: Forester in charge of the Kudawa Conservation Centre, validated by spot checks during site visits

¹⁴ Estimated from 2012 population census in the entire GN Division which has populations in the CZ, using % homestead area of the GND which falls into CZ and TZ and corroborated by field information from the FD field staff.

¹⁵ Previously the BZ was a uniform area around the CZ and included a large number of villages that have little to do now with the SBR. During the present boundary re-definition adjacent forests areas are included in the BZ.

objectives and developing mechanisms that contribute to the implementation of international or regional bilateral or multilateral agreements, conventions, etc.

- The Sinharaja forest was declared a UNESCO World Heritage Site (WHS) in 1988 due to its unique biological features, making it the first natural area in Sri Lanka to receive such a distinction.
- The southern sector of the Sinharaja reserve covers an area believed to be floristically richest region in South Asia (Ashton and Gunatilleke, 1987). This is very significant as Sri Lanka together with the Western Ghats is identified now as one of the world's 25 biodiversity hotspots (Myers, et al, 2000).

PART II: PERIODIC REVIEW REPORT

1. BIOSPHERE RESERVE:

1.1 Year designated: 1978

1.2 Year of first periodic review and of any following periodic review(s) (when appropriate): First periodic review was done in 2003

1.3 Follow-up actions taken in response to each recommendation from the previous periodic review(s) (if applicable), and if not completed/initiated, please provide justifications.

Recommendations	Progress
I. The extension of the participatory management model to new areas in the southern buffer zone	<p>The project to establish this participatory model¹⁶ via the South West Rainforest Participatory Project, was in operation from July 2000 to December 2007 by the Forest Department (FD), but though a project proposal was prepared for World Bank funding to extend it to 2 villages at the southwestern end, funds could not be accessed. However, extension of the model to the northern boundary where it is now most wanted is proceeding. A CBO is being established in the Kudawa area on the northern border and the field staff are exploring the possibility of extending it to one other GN division.¹⁷ More important is the fact that the concept of working with communities by the Forest Department has become entrenched in the work ethic of the Department - so that all engagement with local people is now to varying degrees influenced by this model. The areas where introduction of this model around the SBR is most needed would be investigated and action taken in the future.</p> <p>(Also see section iv below: dissemination of results for application of this model in other areas of Sri Lanka).</p>

¹⁶ i.e. the model developed through the "Contributing to the Conservation of the Unique Biodiversity in the Threatened Rain Forests of Southwest Sri Lanka (GEF ID 818)" carried out by the Forest Department from 2000-2007; generally referred to (as in this report) as the South West Rainforest Participatory Project.

¹⁷ i.e. *Grama Niladhri* Divisions are the smallest administrative units at village level which are linked directly to Divisional Secretariats and via those to the District Administration (District Secretariat) under which the Divisional Secretariat is placed.

Recommendations	Progress
<p>II. The integration of large plantations (both private and state owned) into the participatory management process</p>	<p>This has now being initiated. All large plantation owners in the TZ of the Sinharaja and KDN BRs were consulted via a special meeting for the private sector to formulate a mechanism for their engagement (Annex 1). It was recommended that representatives of the plantation sector within the TZ should be members of the Sinharaja BR Coordinating Committee convened by the FD. This was accepted by the FD and will be followed up.</p>
<p>III. The regular evaluation of the participatory management process with the possible creation of an award for the community based organizations which contributed to forest management, and increasing of their entrepreneurial development</p>	<p>Regular evaluation Through the Periodic Review, the National MAB Committee of the NSF evaluated the status of the community participation initiative established under the South West Rainforest Participatory Project in the TZ of the Sinharaja BR (and other such projects at the other three International Biosphere Reserves). This resulted in identification of strengths and weaknesses of the Sinharaja CBOs and ways to further strengthen them for their long-term effectiveness. Some weaknesses that were identified have already been addressed (See section 5.0 below), others are being followed up by the FD.</p> <p>The concomitant 2013 GEF Country Portfolio Evaluation in Sri Lanka carried out an independent survey¹⁸ of the current status of community participation established under the Global Environmental Facility (GEF) funded South West Rainforest Participatory Project. As the lead consultant for the Sinharaja Periodic review was also a member of the GEF review team, the Periodic Review used these findings (with permission) for initial evaluation of the community participation initiative. The MAB Periodic Review followed-up with an independent socio-economic review of communities in the BZ through householder interviews and focus group discussions in the TZ which was shared with the GEF Portfolio Evaluation exercise. This helped to maximize time and effort of communities consulted, and helped to probe and validate the initial findings of the GEF review by the PR team. Both evaluations were used to demarcate the Transition Zone (TZ) for the Sinharaja BR.</p> <p>The South West Rainforest Participatory Project and CBO activities have also been evaluated and assessed through the mid term review and terminal evaluation of the project by GOSL, GEF & UNDP (Rogers & Abeywardana, 2007).</p> <p>Award scheme</p> <p>Detailed evaluation of the role of Sinharaja CBOs in promoting participatory forest management has been carried out during the parallel BR strengthening process which occurred with this PR. Measures to help these CBOs (set up through the South West Rainforest Participatory Project) were initiated through meetings with the private (i.e. workshop 3) and public sector (District and Divisional Administration) to ensure their long-term continuity in the future and for entrepreneurial development. The formation of a sub-committee for each IBR is being discussed by the National MAB Committee to track progress of the three functions of BRs, including the role of CBOs in demonstrating sustainable development.</p> <p><i>The award scheme will be initiated after such background</i></p>

¹⁸ Survey carried out by the Centre for Poverty Analysis on behalf of the Global Environmental Facility.

Recommendations	Progress
	<p><i>mechanisms are in place.</i></p> <p>Entrepreneurial development Measures for entrepreneurial development for the CBOs have been explored (see award scheme above) and are explained in section 5.0 (development)</p>
(IV) The dissemination of results of pilot studies	<p>The results of pilot tested Community Participation model from the South West Rainforest Participatory Project</p> <p>This model was used very successfully in the GEF/ADB/GON¹⁹ funded Protected Area Management and Wildlife Conservation (PAM&WC) by the Department of Wildlife Conservation (DWLC) Project in seven wildlife protected areas (including the Bundala BR). It was also viewed and adapted by the FD in the Sri Lanka Australia Natural Resources Management Project (SLANRMP) with modifications to suit other climatic regions of Sri Lanka (the second phase of this project has commenced). In Sri Lanka, wildlife reserves are managed by the DWLC while forest reserves are managed by the FD. So intra- and inter departmental transmission has occurred. However, the inter-departmental transfer occurred informally as the same Forest Department officer in charge of the rainforest GEF project was also in charge of the PAM&WC project.</p> <p>The need for a more formal means of sharing the results of the pilot study with the district administration was perceived during meetings held for this review. This was initiated at the meeting with the Agriculture Committee of the Galle District (see Annex 1). More such information sharing was requested by the Divisional Administration at this meeting. <i>This is being followed up by the MAB Committee and FD.</i></p> <p>The research on under-planting in <i>Pinus</i> stands Following the pilot study at Sinharaja for under-planting <i>Pinus</i> with indigenous species (including those of commercial value), trials were established for rattan (<i>Calamus</i>) in the three climatic zones, at Kirindiwela, Gampaha, Ingiriya and Kalutara in the wet zone; at Kurunegala in the intermediate zone; and at Minneriya and Habarana in the dry zone. These trials showed that rattan is most successful under <i>Pinus</i>, also that a successful rattan plantation can be harvested within 9-10 years.²⁰</p>

¹⁹ Global Environmental Facility/Asian Development Bank/Government of the Netherlands

²⁰ Source: Deepani Alawathugoda, Forest Department Research Station data.

Recommendations	Progress
(V) The focus on ecotourism to be promoted	<p>The Kudawa Conservation Centre (KCC) is being renovated to provide better visitor facilities, and the Pitadeniya Conservation Centre (PCC) has also been expanded to cater to ecotourists (See section 6 below). The KCC is working to upgrade its visitor facilities for ecotourism and to cater to foreign ecotourists (as well as local ecotourists) in the future. This is proceeding very satisfactorily.</p> <p>A project aimed at enhancing ecotourism at Morningside, Sinharaja, was stalled due to lack of funds, but the department acknowledges the need to upgrade visitor accommodation (FD/MoENR, 2009). To address this need and to explore private sector assistance to facilitate ecotourism in all four BRs, the National MAB Committee sought to facilitate private sector partnerships, with special reference to ecotourism (and CBO entrepreneurial development) at a meeting held with the private sector (also attended by the Sri Lanka Tourism Development Authority). This resulted in a very positive request for a follow-up workshop to be jointly organized by the private sector and the MAB Committee in 2014 to promote the required partnerships.</p> <p>Meetings held during the review with the District Secretariats of Galle and Matara have also helped position the Sinharaja BR as a prime ecotourism destination which can be factored into district economic development plans and projects. More meetings to follow-this up are expected in 2014 and 2015.</p> <p>It is expected that potential for enhancement of ecotourism at the KCC, PCC and especially the Morningside Bungalow, will be further explored through these various mechanisms by the FD supported by the National MAB Committee.</p>
VI. A better understanding between researchers and the Biosphere Reserve staff	<p>The FD now sends the research proposals approved by the Forest Department Research Committee to FD field staff at the SBR for their information. The field staff at Kudawa are also planning a research day for presentation of research by field researchers in the SBR to the FD staff and communities during the 3rd week of March [This is in their work plans in 2014, and funds reach them around March].</p>
Other:	
Ib. Provide an updated map, and rename the zones according to the International Biosphere Reserves criteria	<p>This has been done and the maps were submitted to UNESCO. The new TZ for Sinharaja is marked in it. The TZ comprises areas where (a) CBOs set up through the Global Environmental Facility (GEF) funded South West Rainforest Participatory Project have been active and there is demonstrated integration of conservation and sustainable development, (b) areas along the northern boundary where this model is to be applied, and (c) there are large tea plantations bordering the forest that will be working as stakeholders in the SBR. All stakeholders (FD, communities, planters, district administration) were consulted when formulating the TZ.</p>
IIb. Encourage and strengthen cooperation within sub-regional and World networks and with the KDN future biosphere reserve (in the process of designation).	<p>The SBR continues to be associated with the Long-term Forest Dynamics Programme across the tropics launched by the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute. Hence it is one of several sites worldwide, in which other BRs are also represented.</p> <p>The GEF South West Rainforest Participatory Project covered the Sinharaja and KDN IBRs which involved cooperation between the reserves for progress review, lessons learnt and addressing problems. Progress tracking of the SBR and KDN BR also occur</p>

Recommendations	Progress
	within the FD internal coordination structure.

Other recommendations of ICC

Recommendation	Progress made
Take into consideration the detailed recommendations which were made during the national periodic review process	<p>The detailed recommendations provided in the 2003 Periodic Review of the SBR, their current status of implementation and how they can be implemented (if not implemented previously) were discussed in detail at the workshop for BR managers (held in Kandy Sri Lanka) by the National MAB Committee. Other BR managers also looked at ways in which the recommendations could be applied to their BRs.</p> <p>The status of implementation of the 2003 recommendations for the SBR are given below:</p>
(a) Formulate a mechanism for a strong facilitating and monitoring role for the Forest Department after the S/W Rainforest Conservation Project ceases	<p>While the FD had to move out of a dominant role at the end of this project due to the nature of the model that was being tested, the need for a strong presence is now accepted. As such, the FD extension staff attend monthly CBO meetings. The Sinharaja Management Plan of 2009 accepts that the FD should also be in a position to provide more inputs to the CBOs such as training, linkages with markets or other government departments to maintain the relevance of the community-FD linkage that was formed, particularly as CBO members are no longer dependent on the forest for their incomes (see also results of consultations during the PR below).</p> <p>To assist, the National MAB Committee in collaboration with the FD are seeking to identify ways of strengthening the CBOs in the TZ by providing product marketing channels (via the private sector) and training (by the state sector) to the CBOs, support the present economic development activities (mainly tea) and to provide other entrepreneurial opportunities including ecotourism (see section 5).</p> <p>Meetings have also been held by the review team, NSF staff, and FD field staff, with district administration (via the District Agriculture Committees) on how district economic development and agricultural support can be provided to the CBOs in the SBR. The first meetings were held in Galle and Matara (Annex 1), and more were requested.</p>
(b) Actively promote the formation of Vigilance Committees within all CBOs	<p>Evaluation of CBO activities (through both the GEF Portfolio evaluation and meetings for the MAB review) showed that although there are no formal vigilance committees, the CBO members (both active and non-active) act in this manner (in secret) so that FD field staff are apprised of any illegal activities in the reserve. If no action is taken, they contact the higher officers of the FD at district or even Headquarters level. This was shown to be clearly a result of the CBO operations emanating from the GEF rainforest project, partly due to the benefits they received from the project and partly due to the intense awareness activities that were carried out. This mechanism is functioning well. It was also said that a formal Vigilance Committee</p>

Recommendation	Progress made
	can be problematic as the informants would then be known and this would create difficulties in the closely knit societies that exist in the Sinharaja BR. The Review Team Agrees with this logic.
(c) Enhance capacity of CBOs to undertake entrepreneurial development.	<p>This has been well pursued by the FD though the South West Rainforest Participatory Project (see section 5 below). It will also be facilitated by the linkages sought with the private and public sector for entrepreneurial development, to be continued in 2014 and 2015. It is also recommended in the Sinharaja Management Plan of 2009.</p> <p>Also more work on this aspect has been done under the Sri Lanka-Australia Natural Resources Management Project (SLANRMP) which followed the GEF project at the SBR and KDN BR. The Micro-enterprise development strategy tested through the SLANRMP can be applied to some extent for entrepreneurial development in the SBR, taking into consideration that the local people in the SBR TZ are mainly concerned with tea cultivation as their main income earner.</p>
(d) Identify material that is most often obtained from the forest through the CBOs and initiate programmes for their propagation in home gardens	This has been done to some extent as is possible in areas where tea cultivation is prevalent. The Forest Department has provided many tree species for home gardens, including fruit and timber species through the South West Rainforest Participatory Project. The Communities continue to obtain significant economic benefit from the fruit trees so provided.
(e) Explore the need and potential to propagate kitul in the buffer zone	It is believed that there are sufficient kitul trees for tapping at the TZ in Kudawa where kitul tapping is still an important activity. ²¹ What is needed now is a marketing mechanism for sale of quality certified Kitul treacle and jaggery (a candy like sweetener from the kitul sap). Talks have been initiated by the KCC with a supermarket chain in Sri Lanka for kitul products, and it is engaged in obtaining information on the potential for product delivery in terms of kitul trees available for tapping in the Kudawa GN Division. At the southern boundary, however, young people are moving away from this tradition (tree climbing) with enhanced education and socio-economic levels of local communities. Promoting kitul tapping in this region needs innovative means of tapping and incentives that could be explored with the private sector.
(f) Assess sustainable harvest rates of rattan and other species propagated through pilot studies for under-planting <i>Pinus</i> in the buffer zone	This has been done. Studies have shown that a successful rattan plantation can be harvested within 9-10 years. Trials in different climatic zones show that well maintained 100 rattan clumps can yield on average 100 mature stems of 15-20 m length within 10 years, and can be re-harvested within 2-3 years. ²²
(g) Promote inter-institutional collaboration with the Plant Genetic Resources Centre for <i>ex-situ</i> conservation of the reserve's genetic resources	The Director of the PGRC was absorbed into the National MAB Committee for this purpose following the 2003 Periodic Review. After he retired, there is no formal mechanism for collaboration at present, but the PGRC makes collections from the BZ and TZ of the SBR as per their institutional work plans.
(h) Instigate measures to disseminate results of pilot studies that have been carried out in the reserve to other state institutions	This has been initiated with the meeting at the Galle District Secretariat via the District Agricultural Committee (Annex 1) where the BR functions and concepts and the model piloted by the South West Rainforest Programme were showcased. This needs to be followed-up by the FD and the National MAB Committee.

²¹ Source: Forester in charge of the Kudawa Conservation Centre.

²² Source: Deepani Alawathugoda, Forest Department Research Station data.

Recommendation	Progress made
outside the forestry sector.	However, results have been disseminated within the FD to other forest sites, and to sites managed by the DWLC (including the TZ of the BBR and HBR).
(i) Give consideration to developing the Sinharaja Biosphere Reserve as a site to promote traditional practices that are dying out in the buffer zone	<p>Not achieved as yet, but it is recommended in the Sinharaja Management Plan (FD/MoENR, 2009).</p> <p>The potential to do so with regard to showcasing traditional drumming and practice of traditional medicine (for humans and animals) at the Pitadeniya Conservation Centre was discussed at the Kandy Workshop for Biosphere Reserve Managers and at Community meetings during this review. The potential for promoting forest based customs and practices is recognized in the Sinharaja Management Plan of 2009.</p> <p>Demonstration of kitul tapping and making of treacle and jaggery will be pursued by the Kudawa Conservation Centre.</p>
(j) Facilitate formation of CBOs and social mobilisation in the villages north of Kosmulla up to Pitakale.	<p>See (l) above. CBO formation at the Kudawa <i>Grama Niladhari</i> Division at the northern boundary (within the mentioned range) is in progress. Potential for CBO formation at Illumbakanda (outside this range, but considered important) is also being explored by the FD.</p> <p>The area immediately north of Kosmulla has to be investigated to see whether there is a need and scope for CBO establishment now.</p>
(k) Organise for forest guides at Pitadeniya to work with their Kudawa counterparts at Kudawa on a rotational basis.	Not done yet, but this was discussed at the BR managers' workshop in Kandy as an activity that would be pursued in 2014. There was agreement by the KCC that the PCC guides can be brought over for training.
(l) Concentrate on ecotourism at the Morningside Conservation Centre	At present the Morningside Conservation Centre functions only as a circuit bungalow and has basic facilities for visitors. It also has an extremely poor access road needing a 4 wheel drive through a private plantation. Upgrading facilities for ecotourism is recognized in the Sinharaja Management plan of 2009. Getting public/private sector assistance to upgrade facilities will be explored at the next private sector workshop in 2014 (See section V above). The KCC is also exploring the prospect of opening a visitor trail from the northern boundary to the Morningside bungalow which will also promote employment for local guides and enhance tourism at the northern boundary of the SBR.
(m) Facilitate a mechanism for sponsorship among the private sector to enhance facilities at the three conservation centres.	See item (V) and (l) above. This was discussed positively at the private sector meeting during this review and will be taken up at the private sector workshop to be organized in 2014.
(n) Seek funds for enhancing and expanding facilities at the research centre and for its maintenance.	This has been done. Funds for re-building the dilapidated kitchen and dining hall at the research centre were provided by the National Science Foundation, Sri Lanka. The research centre has been maintained provides good facilities for about 6 researchers at a given time. The FD staff in charge of the research centre have had discussions with Biolan Finland to set up test composting toilets at this site. The outcome depends on whether Biolan decides to set up operations in Sri Lanka.
(o) Enhancing conservation and management	Recommendations 20-25 under this title have been addressed. The boundary re-definition of the Sinharaja forest has been carried out (in most areas) using a participatory process through the action of CBO members; revised maps of the Sinharaja BR have been prepared with the new zonation and inclusion of a TZ; contiguous forests have been added to the BZ which provides better refuge for macrofauna;

Recommendation	Progress made
	<p>entrance to the <i>Duwili ella</i> waterfalls near Kosmulla is now managed via a ticket counter by the Kosmulla Local Authority so that unauthorized access is precluded; hunting appears to have decreased on the southern boundary as gathered from discussions with local people; a Forest Department barrier has been opened at the southern boundary at the <i>Brahmana Ella</i> water falls in Lankagama.</p>
<p>(p) Revise the zonation, considering the possibility of including the adjacent Handapanella Plains within the Biosphere Reserve to enhance biodiversity conservation, as recommended by field biologists during this review and establishing a transition area.</p>	<p>This recommendation has been acted on. The Zonation has been completely revised. The maps have been sent to UNESCO.</p> <p>The Handapanella Plains is included in the area now being surveyed for acquisition by the FD. This will form part of the BZ of the Sinharaja BR depicted in the revised map. The Land Reform Commission (LRC) which manages these lands at present was notified of proposed land acquisition since the 2003 periodic review, and they have recently agreed to hand over these areas. The transfer of ownership of these areas to the Forest Department for inclusion in the Sinharaja BR has taken a long time due to the presence of some private lands in these areas and the need to adhere to government procedures that apply for acquisition of such lands. At present the survey process is continuing to record the exact boundary points and land extent for acquisition by gazette notification. This takes time as it has to be done by the Survey Department and access to some boundary points is difficult due to the terrain. The exact area to be acquired will only be known once the survey is complete, but it is approximately 4000 ha.</p> <p>This area consists of good regenerating forest and was included in the BZ of the SBR during zonation re-definition.</p>
<p>(q) Investigate the reports of the rise in invasive species (e.g. <i>Alstonia</i> and <i>Clidemia</i>) in the reserve by researchers and communities.</p>	<p><i>Clidemia</i> has not become a major problem as the canopy is closing in previously logged areas and this requires an opening in the canopy.²³ However, future <i>Alstonia</i> invasion has been identified as a threat, and is already seen in the periphery of the Sinharaja forest. Ring barking is being trialed in the Ratnapura district (outside the reserve) as a means of eliminating it.²⁴</p>
<p>(r) Organise a seminar on the Sinharaja forest to showcase it as a biosphere reserve by demonstrating its conservation, development and logistic functions preferably at one of the conservation centres. This can also be used to identify how best to enhance the role of this forest as an IBR and to address the gaps perceived through the review process.</p>	<p>Several meetings (see Annex 1) were organized in association with the Periodic Review for BR managers, regional/district administrators and officials, plantation sector, other private sector and local communities in 2013 to make them more aware of the functions and potential of Biosphere Reserves through presentations. Film clips on Biosphere Reserves in other countries (examples from UK, Canada and Sweden) were used.</p> <p>Showcasing participatory management with local communities in the Sinharaja and KDN BRS commenced with the Agricultural Committee for the Galle District. There were requests from the audience for more information sharing programmes of this nature in 2014 and 2015 at the Divisional Administration levels.</p> <p>The private sector workshop scheduled for 2014 is expected to showcase all 4 BRs in Sri Lanka.</p>

²³ Source: Discussion with Forester at KCC and Experts' Workshop for this review.

²⁴ Source: Divisional Forest Officer, Ratnapura

1.4 Other observations or comments on the above.

The recommendations are being acted on. The National MAB Committee will be tracking progress during 2014 and 2015.

1.5 Describe in detail the process by which the current periodic review has been conducted:

1.5.1 Which stakeholders were involved?

Details and names of people consulted are given in Annex 1.

The categories of key stakeholders consulted were:

- Managers of the SBR (i.e. Headquarters and field officers of the FD responsible for different aspects of management of the SBR.
- Communities living in the SBR - via several community meetings and household interviews.
- As much of the Transition Zone of the SBR fell within the Galle and Matara Districts, the respective District Secretaries were consulted and made aware of the BR concepts and potential to promote sustainable development. This led to further meetings with District Secretaries and a large number of district officials for these 2 districts. This also served to focus their attention on the SBR and to help the FD engage them in future work of the SBR.
- Hotel owners/managers in the BZ and TZ of the SBR.
- Managers of large tea plantations in the TZ of the SBR
- Potential partners in the private sector, and the state tourism sector.
- Individual interview with the Director, Ministry of Environment, Biodiversity Division.
- Researchers who have worked or are working in the SBR and other biodiversity experts with knowledge about the species and biological features of the SBR and changes in these features since 2003.

1.5.2 What methodology was used to involve stakeholders in the process (e.g., workshops, meetings, consultation with experts).

- **Strategy for the review**

A lead consultant was appointed by the National MAB Committee for the review of the Sinharaja Biosphere Reserve (SBR), supported by a sociologist. A review strategy was formulated by the lead consultant for the Periodic Review of all Biosphere Reserves in Sri Lanka in November 2012 for the National MAB Committee of the National Science Foundation. The strategy included preparation of the Periodic Review Report as well as a parallel process by the National Man and the Biosphere Committee whereby the gaps identified during the review would be simultaneously addressed throughout 2013 by BR managers.

The lead consultant for this review was also the reviewer of the Sinharaja Biosphere reserve in 2003. This enabled comparison of the situation in 2003 and at present. The same consultant was also a member of the team carrying out a concurrent evaluation of the South West Rainforest Participatory Project for the Review of the GEF Portfolio in Sri Lanka via the Centre for Poverty Analysis (CEPA) on behalf of the Global Environmental Facility (GEF) which enabled sharing of information and precluded duplication of time and effort for the communities consulted for the same purpose, and also enabled a more detailed review for both processes

The parallel process by the National MAB Committee identified areas that should be strengthened in the SBR to better demonstrate the BR concepts with regard to conservation, development and logistic functions. This included identifying institutional needs to improve facilities and processes to promote education, research and cultural heritage in the SBR, establish better coordination for reserve management among varied stakeholders, a revision of zonation, and a review of the existing management system.

- **Methods used:**

A range of methods were used to maximise data collection and consultations during the Review with regard to time and funds. They included: (a) Desk review of relevant documents and documented data; (2) Institutional visits for individual interviews and group discussions with the Forest Department and administrative officers in district and divisional administration in the Ratnapura, Galle and Matara districts; (3) Field visits: (a) to the KCC (including the research station), PCC and Morningside, *Duvilli ella* and *Brahmana ella* for inspection of visitor and logistic facilities; (b) for discussions with FD Divisional Forest Officers and SBR field officers; (c) for community consultations through focus group discussions and household interviews; and (d) for discussions with hotels and guesthouse owners in the SBR; (4) Workshops and special meetings with stakeholders: BR managers, planters and other private sector, District administrators and officials, and biodiversity experts; and (6) telephone interviews with some government officials who could not be reached during field visits. The number and nature of consultations are summarized in Table 1. The review team, mapping team and all persons consulted are in Annex 1.

Components of the Review

- **Desk review**

of the 2003 Periodic Review document, the ICC recommendations following the 2003 review, and the 2009 Sinharaja National Heritage Wilderness Management Plan, the terminal evaluation reports of the South West Rainforest Participatory Project, the Southern Province Biodiversity Profile and Conservation Action Plan, The report prepared by Ms Manisha de Mel as fulfillment of the 2007 MAB young scientists award for her sociological research in and around the SBR, and other relevant documents pertaining to the SBR since 2005.

The consultant sociologist gathered all available socio-economic data from the most recent census and the most recent land use data for the SBR from the District and Divisional Administration.

- **Field visits - for site inspections**

- Visits to CZ, BZ and TZ for field checks on boundaries, contentions issues, follow-up from the 2003 periodic review, major land uses and issues relating to land use and conservation, and inspection of facilities at the KCC, PCC, Morningside bungalow, *Brahmana ella* and *Duwili ella* sites.
- Inspection of key biodiversity features in the CZ and land use in the BZ and TZ.
- Visits to tourist accommodation in the SBR.

- **Field visits - for meetings with FD field staff**

Three Field visits were made to the Sinharaja Biosphere Reserve by the lead consultant, and several more were made by the sociologist for:

- Meetings with FD field staff of the SBR at Kudawa Conservation Centre (KCC), Pitadeniya Conservation Centre (PCC), and Morningside.
- Meetings with FD staff at the Neluwa Range office (Galle), Divisional Forest Officers of Ratnapura, Galle and Matara, and Range Forest Officer at Agalawatte (Kalutara district).

- **Field visits - for community consultations**

Focus Group discussions with communities and individual household interviews to gather necessary socio-economic and land use data at grassroots level and to evaluate reserve

management, and potential for community participation and sustainable development in the SBR.

- Several focus group discussions²⁵ were carried out with members of Community Based Organizations (CBOs) set up by the FD under the South West Rainforest Participatory Project to promote Sustainable Community Development in 7 *Grama Niladhari* (GN) Divisions²⁶ (i.e. these are the smallest administrative units at village level which are linked directly to Divisional Administration and through them to District Administration). The discussions served to assess the current status of these CBOs in terms of: (a) level of activity (b) how the livelihood development activities had contributed to sustainable development as per concepts underlying the BZ and TZ, and (c) community participation for conservation and sustainable development.
 - Focus group discussions with communities in the TZ to finalise the TZ, and obtain their inputs into the PR (testing the indicators).
 - 80 individual random household interviews to gather necessary socio-economic and land use data at grass roots level.
 - Individual interviews with the guide at the Kosmulla *Duwii ella* and non-CBO members at Lankagama.
 - Discussions with key individuals in the TZ - community elders with long-term memory.
- **Special meetings**
 - Meeting with Forest Department Head quarters staff to finalize issues regarding the report and mapping.
 - Three meetings with the District Secretaries of Galle and Matara Districts and other relevant officers (via the District Agricultural Research Committees) to engage their cooperation, and obtain their responses and finalization of zonation. The meetings were organized by the FD and District Secretaries for Galle and Matara Districts. The review team explained the purpose of the review and obtained their inputs. The meetings were also used to create awareness of the MAB concepts and functions of a MAB reserve, and to help the FD obtain greater participation of these groups in the future to promote sustainable development within the TZ. The SBR Zonation map was validated at these meetings.
 - Meetings with potential partners for partnerships in the BRs
 - A meeting held to explore potential for partnerships with the private and public sectors to enhance logistic and development functions of all BRs, including ecotourism development, taking into consideration individual needs of each BR. This involved participation of DWLC and FD relevant head quarters and field staff.
 - The same meeting was used to engage large plantation owners in the TZ of the SBR.
 - **Workshops**
 - BR managers workshops
 - Two contiguous residential workshops held by the MAB Committee and review consultants for different levels of field managers and education/extension officers of all 4 BRs in Sri Lanka (i.e. the DWLC and FD that were managing the BRs), to assess suitability of the current zonation in all 4 BRs, identify potential activities for enhancement of BR functions in each, and promote inter BR linkages.

²⁵ Two meetings were held in connection with the Sri Lanka GEF portfolio review by the Centre for Poverty Analysis (CEPA) on behalf of the Global Environmental Facility) in which the review consultant participated. The data are used with permission. Likewise the field information on CBOs from the MAB PR were shared with the GEF review to the benefit of both reviews. .

²⁶ The CBOs in the GN Divisions of Kiriweldola, Keeriwelgama (2 CBOs at Keeriwelgama and Dehigampola CBOs), Mederipitiya, Lankagama (Wathugala CBO), Warukandeniya, Tthambalagama and Kosmulla.

- The first served to identify necessary changes in the zonation of the SBR and to identify a TZ to better support the functions of a MAB reserve.
 - The second workshop served to initiate the preparation of education and communication strategies for all 4 BRs in Sri Lanka.
- Expert review for biological and cultural importance and changes since 2004:
 - A one day workshop for BR managers, biodiversity experts and researchers at all 4 Sri Lankan IBRs to:
 - a) identify changes in biodiversity in each since the last periodic review (for Sinharaja, and since nomination for others), and identify indicators for ecosystem services assessments
 - b) Validate species lists for each BR.
- **Institutional visits**
 - Individual institutional visits to the Ministry of Environment and Renewable energy by the lead consultant for discussions.
 - **Mapping**
 - As the SBR map provided with the 2003 Periodic Review was hand drawn, a digitized map was prepared by the Forest Department in consultation with the review consultant. Mapping involved field verification by the review team.
 - The draft map was reviewed and changes for the BZ and addition of a TZ were made at the workshop for managers of all four BRs. This was finalized after presentation to the district administrators in the Galle and Matara Districts, communities in the TZ and managers of large plantations adjacent to the SBR.
(This procedure was considered necessary as the TZ of the SBR had not been identified earlier and concurrence was needed from stakeholders to finalize the TZ).

1.5.3 How many meetings, workshops, etc. occurred throughout the process of conducting this review?

Table 1: Consultations held (see Annex 1 for details of attendance Table)

Process	Number of meetings
Meetings with Divisional Forest Officers (DFOs) of Ratnapura, Galle and Matara and discussion with DFO Ratnapura at the KCC	03
Three multiday field visits to the Sinharaja BR, field inspections, and, field staff at the conservation/education centres at Kudawa and Pitadeniya, Morningside bungalow, and the Neluwa and Agalawatte Range Offices, and field checks on logistic functions including visitor accommodation at KCC, PCC and Morningside. Visit to the Field Research Station at Halmandiya, Sinharaja (managed by the KCC).	KCC = 2 PCC= 1 Morning side = 1 Neluwa RO =1 Agalawatte RO =1 (N=19 field staff)
Meeting with the Former Conservator General of forests, and group meeting with the present Conservator General of Forests and all headquarters officers involved with decision making in the SBR, HBR and KDN BRs and officer in charge of the BR mapping exercise.*	02 (1+5)
Visits to hotels/guest houses in the SBR for meetings with owners or manager.	08
Stakeholder meetings with District Agriculture Committee (DAC) of Galle and Matara Districts, attended by District Secretary Matara. The DAC meetings included district officers of most departments and ministries,	02 (N= 59+24)

Process	Number of meetings
farmer /tea small holder groups.	
Meeting with the District Secretary Galle.	01 (N=9)
Meetings with Assistant Director Planning of the Neluwa, Kotapola, and Kalawana Divisional Secretariats.	03
Group meeting with large plantation owners in the TZ and potential partners in the private sector, National Chamber of Commerce and Sri Lanka Tourism Development Authority (SLTDA). (with Dr Natarajan Ishwaran as guest speaker)	01 (N=31)
Meeting with Coordinator of the Greening of the Hotels Project in connection with the Rainforest Ecolodge in the SBR TZ	01
Community meetings in the Ratnapura, Galle and Matara districts. This included representatives of tea small holders.	05 (21+45+56)
Workshops for BR managers Kandy (BR management and preparation of a communication strategy respectively)	02 (N=32, N=26)
Workshops for experts on species and biodiversity and cultural importance of all 4 BRs.	01 (19)
Institutional visits to Ministry of Environment and Renewable Energy.	01
Individual household interviews in the Galle, Matara and Ratnapura districts within the TZ	80

* In addition frequent visits were made to the FD during the course of the review as needed for data collection, discussions and mapping.

1.5.4 Were they well attended, with full and balanced representation? (Describe participation and stakeholders).

All meetings were well attended. See Annex 1 for attendance lists. There was balanced representation of BR managers, regional administrators and officials and community during the consultations. There was good gender representation among those consulted at the community levels (males 1.1: 1 females). Communities, scientists, administrators, and BR managers were all consulted.

2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE DURING THE PAST TEN YEARS:

2.1 Brief summary overview: Narrative account of important changes in the local economy, landscapes or habitat use, and other related issues. Note important changes in the institutional arrangements for governance of the biosphere reserve area, and changes (if any) in the coordinating arrangements (including the biosphere reserve organization/coordinator/manager) that provide direction for the biosphere reserve. Identify the role of biosphere reserve organization/coordinator/manager in initiating or responding to these changes.

- Important changes in landscapes and habitat use

There have been no major change in the landscape and habitat use since 2003, except for regeneration of the previously selectively logged areas in the CZ into high forest. However, as the zones have been redefined, large extents of forests are now part of the BZ, mainly at the western and eastern borders. As before, the reserve (CZ) grades directly into human settlements and agriculture (TZ) along most parts of its southern boundary, where land use abutting the reserve comprises mainly tea smallholdings and home gardens interspersed with small extents of paddy and

rubber. In the Matara District the land use along the southern boundary also contains a few state owned *Pinus* plantations and several large tea plantations (estates) under private or state ownership. Some of these plantations contain forest areas under-planted with wild cardamom (*S:ensal*). The eastern side of the reserve is sparsely populated and bounded by forest and several large tea estates which are now regenerating forest. There are currently several large tea estates under state and private ownership and managed by large plantation companies. The resident labour force of some estates are located near the reserve boundary. The landscape along the northern boundary of the reserve is state owned forests and *Pinus* plantations, interspersed with sparsely populated home gardens, tea small holdings and small extents of other crops and paddy. Redefinition of the BZ has included many good quality contiguous forests into the SBR, as some forest plantations mainly along the northern boundary.

Table 2: Percentage Landuse in Different Zones of the Sinharaja Biosphere Reserve

Habitat type	Zonation (% of area)		
	CZ	BZ	TZ
High forest	93.7	92.6	4.6
Plantation forest	0.2	3.3	1.7
Tea		0.5	33.5
Tea dominant homesteads		0.4	
Home stead	6.1	0.5	47.8
Rubber dominant homesteads			9.3
Rubber		0.3	2.2
Scrub (forest)		1.9	0.8
Other important	0.02	0.4 (Paddy)	

Land use as shown by the mapping exercise is in Table 2. This was checked with local people during focus group discussions (N=45). In the BZ, forest, tea and homesteads and tea were identified as main land uses by 100%, 40% and 20%, tea while homesteads, tea, paddy and other crops were listed as main landuses by 100%, 40% and 20% in the TZ. In terms of historic landuses during the past 10 years, all respondents cited forests as the major historic land use in the CZ; 100% and 40% cited forests and small tea cultivations for the BZ and, 89%, 60%, 40% and 20%, cited homesteads, tea plantations, paddy cultivations and large tea plantations as main land uses during the past 10 years in the TZ.

Data: Edirisinghe and Chandani (2013) from the Forest Department GIS unit from the mapping exercise.

The present survey showed that 73% of respondents for the household survey (total N=80) lived/cultivated on inherited lands, 10% had inherited as well as encroached, 1.2% were on encroached lands only. All stated that land use changes had occurred in the SBR during the past 10 years: all stated that home gardens and tea lands had increased, only 40% felt that forests had decreased, and only 20% felt that there was no change in paddy lands. All felt that this was because the population and landowners had increased in the SBR. A survey by de Mel (2008) in the Sinharaja forest and around revealed that only about 65% of households surveyed lived on inherited land (compared with 83% during the present survey), but this may have been because the survey covered a larger geographical area than the present SBR, and not because of an increase in this category per se. However, the mapping shows that forests predominate as the land use in the SBR.

- **Important changes in the local economy**

Overall, tea is the main economic activity as found in the 2003 Periodic Review (Dela, 2003) and de Mel's survey (de Mel, 2008), so that there has been no major change in the major economic base. However, the local economy has improved. The household socio-economic survey²⁷ revealed that 95%

²⁷ Details of the household interviews (N=80): 82.5% of the respondents were heads of households (of which 12.12% were females), 13.7% were the householder's wife, 1.25% were daughters and 2.5% were sons of householder respectively. By gender, 75% were males, 25% were females. By age group, 20% of respondents were in the 20- <35 year age group, 65% were in the ≥ 35 - <60 age group; 15% were in the ≥ 60 year age group. 100% respondents were Sinhalese, and 100% were Buddhists. 35% received some form of state aid, all were *Samurधि* recipients. [The Tamil population was entirely estate labour that were living in the estates as paid labour. The household survey was confined to householders in the village areas].

of respondents had tea cultivations of varying sizes; the main income of 82% of respondent households was from tea, either as a cultivator, labourer or driver of trucks collecting tea; none were dependent on the forest for their main income, but about 15% obtained some income from forest products -mainly food items such as mushrooms, kitul products and medicinal plants.

In the BZ: During the focus group discussions (N=45, 5 groups, multiple economic activities were possible for each respondent), kitul tapping and tourism were stated by 100% and 40% respectively as main economic activities in the BZ, but they all said that kitul tapping was decreasing due to the lack of tappers. This trend was evident in 2003, when 74% of people and 83% of FD staff thought that kitul tapping was a major forest based activity, but was not popular with the younger generation. This review also found that kitul tapping had decreased because the educated younger generation does not want to take to this activity, as they wanted to move towards jobs in the private and state sector.

In the TZ: All respondents identified tea cultivation as a main income earner in the TZ, but unlike in 2003 (Dela, 2003), 60% identified paddy cultivation, 40% identified tourism, and 20% identified mini-hydropower plants as major economic activity in the TZ. However, all agreed that the income from mini-hydropower plants was gained by outsiders to the SBR.

The socio-economic status of the community can be seen from the fact that among the respondent households, permanent housing was 97%, only 1.3% had no electricity. However, almost all depended on the forest for water, and only 10% depended wholly on water from outside the forest.²⁸ More details are given on the local economy in Section 5.

Important changes in the institutional arrangements for governance of the biosphere reserve area, and changes (if any) in the coordinating arrangements (including the biosphere reserve organization/coordinator/manager) that provide direction for the biosphere reserve.

There is no major change. The Forest Department (which currently comes under the Ministry of Environment and Renewable Energy) continues to manage the Sinharaja BR and is responsible for overall implementation of the 2009 Management Plan for the Sinharaja National Heritage Wilderness Area (FD & MOENR, 2009). It bears responsibility for coordination with other stakeholders including district administration and communities (in the TZ). During this review there were discussions with district administrators, communities and large plantation owners about how the coordination can be made more effective and inclusive. As such, the FD will continue to be responsible for SBR management (taking into consideration that the CZ is also a World Heritage Site and a National Heritage Wilderness Area), but will convene a SBR Coordinating Committee for all major stakeholder groups, including members of CBOs established by the FD, plantation owners and representatives of the National MAB Committee.²⁹ This change was initiated based on consultations during this review and has the agreement of the FD. The FD will also coordinate with regional administration via the District Coordinating Committees of Matara, Galle and Ratnapura (DCCs) as done previously, and also through the District Agriculture Committees of all three districts. The appointment of an overall coordinator/manager to develop the logistic and sustainable development functions of the Sinharaja Biosphere Reserve is being explored by the FD.

²⁸ From the household survey (N=80).

²⁹ Confirmed after discussion with Conservator General of Forests and key FD staff and presented at the district administrators' meetings.

2.2 Updated background information about the biosphere reserve.

2.2.1 Updated coordinates (if applicable). If any changes in the biosphere reserve's standard geographical coordinates, please provide them here (all projected under WGS 84):

Cardinal points:	Latitude	Longitude
Most central point:	06 23 39	80 28 33
Northernmost point:	06 30 00	80 19 53
Southernmost point:	06 19 28	80 27 04
Westernmost point:	06 26 12	80 18 30
Easternmost point:	06 22 33	80 39 56

Data: Edirisinghe and Chandani (2013) from the Forest Department GIS unit

2.2.2 If necessary, provide an updated map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve Map(s) shall be provided in both paper and electronic copies. Shape files (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form.

If applicable, also provide a link to access this map on the internet (e.g. Google map, website).

The zonation and topography maps with shape files have been provided to UNESCO. JPG copies of the Zonation, topography and landuse maps are in Annexes 2 and 3.

2.2.3 Changes in the human population of the biosphere reserve.

Most recent census data:

	Previous report (nomination form or periodic review) and date	At present (please state date of census or other source)
Core Area(s) (permanent and seasonally)	Not provided. Only forest department staff and a few villages that were slated to be relocated.	1,654 ³⁰
Buffer Zone(s) (permanent and seasonally)	26,000 persons in 6,500 families living in about 40 villages (compared with 5,457 in 1980), with a range of 42-429 households in a village. ³¹	120 (FD field staff+ villagers -mostly with temporary housing within the BZ) (source: FD sources)
Transition Area(s) (permanent and seasonally)	Not defined. The BZ villages are now in the TZ.	10,800

The 2003 population estimates were based on available literature. As there was no administrative basis for the BZ zonation, it was not possible at the time to relate census data (which are for *Grama Niladhari* Divisions) to the mapped BZ which was conceptual. The present TZ and BZ are consonant with *Grama Niladhari* Divisions, making it possible to accurately present population data. The Present BZ covers both natural and planted forests managed by the FD. Except for a few

³⁰ Estimated from 2012 population census in the entire GN Division which has populations in the CZ, using % homestead area of the GND which falls into CZ and TZ and corroborated by field information from the FD field staff.

³¹ Previously the BZ was a uniform area around the CZ and included a large number of villages that have little to do now with the SBR. During the present boundary re-definition adjacent forests areas are included in the BZ.

temporary shelters interspersed with forest plantations at the northern boundary and a village in one BZ forest (Kalukandawa)³², there can be no permanent settlements in the BZ. The TZ has been defined on the basis that it can be used to demonstrate approaches for sustainable development as consonant with the BR concepts and were the areas most connected with the SBR.

2.2.4 Update on conservation function, including main changes since last report.

(Note briefly here and refer to 4 below).

There is no change in the high conservation status of the CZ since the last report. Consultations with communities and BR managers suggest that the conservation function has been significantly improved due to the greater engagement of local people now. This is especially seen along the southern boundary where the CZ grades directly into TZ, attributed to the success of the South West Rainforest Participatory Project. Work to engage the local communities at the northern boundary is ongoing via the KCC. More details are given below under sections 4 and 5.

2.2.5 Update on the development function, including main changes since last report.

(Note briefly here and refer to 5 below).

Considerable work has been done since 2003 to demonstrate that communities can be engaged in conservation if adequately mobilized and helped with socio-economic development. The model for community participation in conserving/managing the Sinharaja Forest through the South West Rainforest Participatory Project has demonstrated that even 5 years after the project ended, the links built between people and the forest managers can remain to support forest conservation. It has also had a major impact on veering the Forest Department field staff away from a policing role to one in which they see the advantage of working with local communities for forest conservation. More details are in sections 4 and 5. This model has been used successfully by the Forest Department in other areas and by the Department of Wildlife Conservation in 7 wildlife Parks including in the BBR and HBR.

2.2.6 Update on logistic support function, including main changes since last report.

(Note briefly here and refer to 6 below).

Research, education and monitoring activities have continued in the SBR as before. The facilities for researchers at the Research Centre at Halmandiya have been enhanced with better kitchen and dining facilities; visitor accommodation has been greatly increased and visitor facilities enhanced at the KCC. Since 2003, the visitor centre at the KCC has been re-furbished and has received new exhibits; the KCC has a new spacious auditorium for schools programmes, and the small auditorium in the main accommodation facility at the KCC is used for night time watching of environmental films by visitors, etc. The PCC has received a new visitor centre and more visitor accommodation units since 2003. The educational programmes have also since expanded at both KCC and PCC. However, the PCC is somewhat constrained by the lack of a motorable road, as this involves a >2km walk to the main Pitadeniya Conservation Centre, but alternatives are being explored. The Morningside Bungalow has also been renovated to some extent since 2003, but it still remains very basic and in need of refurbishment to make it attractive for ecotourists, particularly for foreign tourists. Research programmes in the SBR are continuing, including internationally acclimated programmes. A biodiversity monitoring survey has been done in the SBR since 2003.

³² Discussion with RFO Agalawatte.

2.2.7 Update on governance management and coordination, including changes since last report (if any) in hierarchy of administrative divisions, coordination structure.

(Note briefly here and refer to 7 below).

The management structure within the FD has not changed. The management of the SBR comes under the Environmental Management Unit at FD headquarters (headed by the Senior Deputy Conservator of Forests (Environment Management), under the Conservator of Forests (Operations), overseen by the Conservator General of Forests. Supervision of protection functions and the preparation of annual work plans and programmes for the Sinharaja BR are done by the Divisional Forest Officers (DFOs) for Galle, Matara and Ratnapura districts. This is coordinated and monitored by the Deputy Regional Conservator of Forests of the Southern and Sabaragamuwa Region which is a new post since 2003. The responsibility for action with regard to CZ protection lies with the Kalawana, Neluwa and Deniyaya Range Forest Offices (under the Ratnapura, Galle and Matara DFOs respectively). In addition there are the two management units at the KCC and PCC which report to the Ratnapura and Matarara DFOs respectively. The Morningside Bungalow also comes under the Ratnapura DFO. The KCC management is headed by a Forester while the PCC is headed by a Range Forest Officer (see 2.3.2 for staffing)

Progress: Management at field level has become more efficient and decentralized with the appointment of a Regional Deputy Conservator of Forests for financial approvals, monitoring and coordination. The appointment of an overall coordinator/manager to develop the logistic and sustainable development functions of the Sinharaja Biosphere Reserve under the current institutional structure is being explored by the FD.

2.3 The authority/authorities in charge of coordinating/managing the biosphere reserve:

(Comment on the following topics as much as is relevant).

The Forest Department will manage the SBR with support from the District Secretariats of Galle, Matara (mainly), and Ratnapura, with collaborative support of local people and large plantation owners. A SBR Coordinating Committee will be established and convened by the FD to facilitate stakeholder support and coordination.

2.3.1 Updates to cooperation/management policy/plan, including vision statement, goals and objectives, either current or for the next 5-10 years

There is a very comprehensive management plan for the Sinharaja National Heritage Wilderness Area (NHWA), which covers the present CZ, BZ and TZ and management of the SBR. It states that the goals and objectives of a MAB reserve were taken into consideration during preparation of the Management Plan (FD/MoENR, 2009). This plan is valid until December 2014. As the TZ to the SBR was identified only during this review, and forests have been added to the BZ of the SBR, this has to be incorporated into the next revision of this Plan. It considers that as the Sinharaja NHWA is the CZ of the SBR “Therefore, management objectives of the Sinharaja forest should be aimed to fulfill the objectives of MAB, Natural world Heritage and protected areas” while meeting the National Forest Policy Objectives and the Millennium Development Goals and Targets. These objectives have been developed through a logical framework approach (FD/MOENR, 2009). The Plan strongly recommends that forest management should be undertaken with the highest level of participation by the local people in the buffer zone (ibid), and covers the conservation, development and logistic support functions of a BR.

BOX 1: Vision goals and objectives of the SBR

Vision of the Sinharaja NHTWA Management Plan:³³ BD, soil, water and other ecosystem services are conserved and the social welfare of peripheral communities is enhanced through the ecosystem approach.

Goal:

To conserve the Sinharaja Forest for posterity with regard to biodiversity, soil, historical, cultural, religious, scientific and aesthetic values and to enhance contribution of forestry to the welfare of nearby communities and to the national economy.

Objectives:

1. The composition, structure, functions and evolutionary potential of biodiversity is conserved.
2. Regulatory ecosystem services are provided.
3. Livelihoods of Sinharaja buffer zone communities improved (needs to be changed to TZ)
4. Recreational capacity of the Sinharaja forest maintained and enhanced
5. Educational and Research opportunities are provided.
6. Institutional structure and legal framework for management of the Sinharaja forests is established.

It was agreed that the above vision, goals and objectives applied to the Sinharaja Biosphere Reserve¹³ with a change to objective 6 to:

Institutional structure and legal framework as required for management of the SBR's CZ, BZ and TZ are strengthened)

Note: *While the conservation and use of traditional knowledge is not among the objectives, this is specifically addressed in the 2009 Management Plan (page 36 - as Protection of Traditional Wilderness-based Customs and Page 32 Traditional rights of local communities to maintain their customary and spiritual wilderness-based lifestyles protected).*

2.3.2 Budget and staff support, including approximate average annual amounts (or range from year-to-year); main sources of funds (including financial partnerships established (private/public), innovative financial schemes); special capital funds (if applicable); number of full and/or part-time staff; in-kind contribution of staff; volunteer contributions of time or other support.

Budget in the previous report (nomination form or periodic review) and date	Current budget
Not available	<p>Approximately US\$ 44,760 on average per year (using 2011-2013 data) without staff salaries at KCC, PCC and Morningside which amount to about US \$ 62,091 per year. (Total approx: US \$ 1,06,849 per year).</p> <p>In addition there are payments to temporary staff, allowance for volunteer guides, and project funds such as the US\$ 975,713 for the South West Rainforest Participatory Project (GEF financing of US\$ 749,713 and US\$ 226,000 in co-financing from the Sri Lankan government) over the project duration for both Sinharaja and KDN BRs.</p> <p><i>Note: The staff who work on protection at the Range Forest Offices are funded separately and their work includes all forests in their respective forest ranges.</i></p>

³³ Validated at the BR Managers' workshop in Kandy by managers of the SBR at FD Headquarters and at different field levels.

- Staff support:

	Kudawa Conservation Centre (KCC)	Pitadeniya Conservation Centre (PCC)	Morningside bungalow for visitors
Forester (at KCC)	1		
Range Forest Officers	1 (full time) 1 (part time)	1	
Beat Forest Officers	3	1	
Extension Officer	2	0 (but one FA is acting as the Extension Officer)	
Field Assistants	5	9	
Labourers	10	3	
Labourers part time		1	
Other staff			
Drivers	1		
Watcher/bungalow keeper			1
Non staff volunteer local guides at KCC, PCC (including <i>Brahmana ella</i>).	27	19	

Note: The above staff are those directly responsible for SBR work at the Kudawa and Pitadeniya Conservation Centres and the Morningside Bungalow and a part time RFO at Kalawana RFO office who visits the KCC. In addition, staff of the various Range Forest Offices (see below) are also concerned with protection and education functions as part of their Range Operational Plans.

The Staff at the Kudawa and Pitadeniya Conservation Centres as well as the Neluwa Range Forest Office liaise with local people, Community Based Organizations (CBOs) and other non- governmental organizations to promote sustainable development in the TZ that does not damage the biodiversity of the CZ. This helps engage local people in forest conservation and some aspects of forest management such as vigilance to reduce illegal actions and for boundary marking and maintenance. The extension staff carry out education and awareness activities to implement the concepts and recommendations proposed in the Management Plan. The KCC is headed by a Forester who reports to the Ratnapura Divisional Forest Officer (DFO), while the PCC is headed by a Range Forest Office who reports to the DFO Matara. Protection of the CZ is done through the Range Forest Offices of Kalawana, Neluwa and Deniyaya, under the Divisional Forest Offices of the Ratnapura, Galle and Matara districts respectively. The KCC and PCC do not deal with protection, and all such matters are conveyed to the RFOs of Kalawana, Neluwa and Deniyaya. All management units come under the Regional Deputy Conservator of Forests for the Sabaragamuwa and Southern Region for financial control and monitoring. In addition, a part of the newly identified BZ (all forest land) in the SBR falls into the Kalutara Divisional Forest Range for protection activities through the Agalawatte Range Office.

2.3.3 Communications strategy for the biosphere reserve including different approaches and tools geared towards the community and/or towards soliciting outside support.

The Neluwa RFO office and the Kudawa and Pitadeniya Conservation Centres of the FD have extension officers dedicated to education activities and community outreach. As such they have their education and communication activities planned annually (activities conducted are given in detail below in section 6).

The need for a strategic plan for environmental education with specific curricula developed for different interest groups is identified in the 2009 Sinharaja NHTWA Management Plan, and the prescriptions are provided (p.51).

As such, the development of a holistic strategic communication plan for all 4 Sri Lankan BRs that could reach out to diverse stakeholder groups was initiated at a workshop for biosphere reserve managers and extension officers conducted by the National MAB Committee in connection with this review (Attendance list in Annex 1). A follow-up workshop is planned for 2014 to complete the respective plans. The Communication Strategy for the SBR will be developed by extension staff and the Forester in charge of the KCC together with the staff of the PCC, and will be finalised in consultation with the other relevant officers of the FD at DFO and RDCF levels and the Research and Education Division at Forest Department headquarters.

2.3.4 Strategies for fostering networks of cooperation in the biosphere reserve that serve as connections (“bridging”) among diverse groups in different sectors of the community (e.g. groups devoted to agricultural issues, local economic development, tourism, conservation of ecosystems, research and monitoring).

Community level:

At the southern border of the SBR which is thickly populated, the CBOs formed under the South West Rainforest Participatory Project have been the most effective means of networking with the local people. While members attending CBO meetings have decreased since the project ceased (i.e. because incentives such as training for livelihood activities are reduced), all members have kept up good relations with the Forest Department field staff so that the networking function still holds. During community consultations for both the MAB and GEF Portfolio reviews, both local people and FD staff reiterated the positive impact of linkages built between local people and FD staff for forest conservation and management.

The northern boundary of the reserve is less populated by local people and there has been no formation of CBOs under the SW Rainforest Participatory Project. Here the KCC organizes various activities such as religious ceremonies, cultural events, blood donation camps which enable participation of a large number of local people. The KCC also carried out distribution of energy efficient cooking stoves (to promote sustainable use practices and lessen the need for firewood from the forest), and distributes *sudu handun* plants of medicinal value and commercial potential. The KCC networks with the community through the volunteer guides working at the KCC as they are from the local communities.

The 2009 Management Plan clearly identifies a major role for the FD in catalyzing and monitoring of CBOs to enhance their capacity to integrate conservation and development functions (p 36). While there are about 100 CBOs around the reserve (FD/MoERE, 2009), they have been formed for very specific purposes such as the Tea Small Holders’ Societies, Death Donation Societies, Village Development Societies, Energy societies, etc. The *Sinharaja Sumithuro* (friends of Sinharaja) societies were, therefore, formed under the previous management plan to implement and integrate development and conservation. However, most of these are now inactive, except those that were strengthened or formed through the South West Rainforest Participatory Project, but the basic structure is present to initiate the required networks of cooperation with the local people. Many *Sinharaja Sumithuro* (friends of Sinharaja) societies earlier formed at the northern boundary did not support socio-economic development, and have fallen into abeyance. Hence, a new CBO is being formed (on the Rainforest Participatory Project model) with the support of the KCC, and will be registered with the Kalawana Divisional Secretariat following the GEF rainforest participatory model.

During the focus group discussions with the community, the suggestions for enhancing networks of cooperation were: (a) establishing a SBR Coordinating Committee by the FD (which is what will be done), and creating a main forum for CBOs set up under the SW rainforest project as a “mother “ Committee.

Networks within the FD for management:

The background to SBR management: In Sri Lanka, environmental matters fall within the ‘Concurrent List’ for which both the Parliament and Provincial Councils can legislate in consultation with each other. Protection of the environment is in the Concurrent List, but the Forest and Wildlife related policies are the responsibility of the Forest Department and the Department of Wildlife Conservation (and their respective Ministries), under the Central Government. Thus conservation of the CZ of the

SBR comes under the Central Government and any issue herein becomes a national issue given its status as a World Heritage Site (WHS) and a National Heritage Wilderness Area (NHWA).

However, due to significant decentralization of the Forest Department, individual forests are managed by Range Forest Offices (headed by a Range Forest Officer) who report to Divisional (district level) Forest Officers, who report to Regional Deputy Conservators of Forests, who report to Forest Department headquarters. As such, much of the “on the ground management” occurs at Divisional Level, with financial control, monitoring and coordination occurring through the RDCF, and overall policy decisions being taken at Head Quarters and its line ministry. Thus the main responsibility of managing the CZ comes under the purview of the Ratnapura, Galle and Matara Divisional Forest Officers (DFOs), with the actual work carried out by the Range Forest Offices at Neluwa (under Galle DFO), Deniyaya (under Matara DFO) and Kalawana (under Ratnapura DFO). Management activities at the KCC and the Morningside Bungalow come under the Ratnapura DFO, the Pitadeniya Conservation Centre and the *Brahmana ella* entry point come under the Matara DFO.

The FD networks with universities (for research) and other groups (such as jeep owners/drivers for tourism) and communities (through CBOs and voluntary visitor guides) for various management needs. The jeep owners at the KCC also benefit from the FD decision to limit private vehicles from going up to the entrance gate of the Sinharaja NHWA via the KCC; but registered jeeps can take visitors to the gate via another route

Networks at district level:

All work within administrative districts in Sri Lanka is coordinated by District Secretariats, headed by a District Secretary, who is answerable to the respective Provincial Council, which answers to Central Government. Each District Secretariat has several Divisional Secretariats under it headed by Divisional Secretaries. Each Divisional Secretariat has what are called *Grama Niladhari* Divisions (GNDs) headed by a *Grama Niladhari* (village officer) who liaises with the people in each GND unit and reports back to the Divisional Secretary. The entirety of the Sinharaja BR falls within the purview of the Ratnapura, Galle and Matara District Secretariats, with one forest (managed by the FD) in the newly demarcated BZ falling within the area covered by the Kalutara District Secretariat. As such the SBR is contained within the Divisional Secretariats of Kalawana (Ratnapura), Neluwa (Galle) and Deniyaya (Matara) and Agalawatte³⁴ (Kalutara). However, the main TZ areas that fall outside the direct jurisdiction of the FD are in the Galle and Matara districts, and one GND (Kudawa GN Division) is within the Ratnapura district.

Coordination of networks at district level:

Coordination within the district administration takes place in many ways: The respective Divisional Forest Officers are members of District Coordinating Committee (DCCs) headed by a Member of Parliament from the district, in which the District Secretary acts as Secretary. The DCC tracks development in the District in terms of financial allocations for development and any issues that come up in the pursuit of development. All key departments and a few NGOs and farmer groups are members. Pressing land and other issues in the district are addressed here. Other mechanisms for coordination are the District Agricultural Committees (DAC) headed by the District Secretary and attended by all Divisional Secretaries in the district, regional representatives of other government departments and statutory bodies (e.g. Department of Agriculture, Irrigation Department, Urban Development Authority, Central Environmental Authority, etc), representatives of the FD (respective DFO), representatives of several NGOs and Community Based Organizations (CBOs), and Farmers Associations/organizations that operate in the district. This ensures a good consultative forum for regional decisions and conflict resolution that are relevant for agricultural or land issues. All state organizations working in the district (including programmes of the Economic Development Ministry (i.e. *Divineguma*, *Gemidiriya* and *Samurdhi* programmes for socio-economic - described in section 5) are represented in this Committee. As such the DFOs for Matara, Galle and Ratnapura can network with a large group through the DCC and DAC, and issues pertaining to the SBR as relevant for that district can be taken up in these fora. Each Divisional Secretariat too has its own DCC and DAC, and matters which cannot be resolved at that level are brought to the District Coordinating Committee and the District Agriculture Committee. Issues that cannot be resolved at the District Agricultural

³⁴ Only forests fall within the Kalutara district. As they managed solely by the FD, the scope of the Kalutara District Secretariat in the SBR is minimal. However, the Kalutara DFO can keep the District secretariat informed of SBR activities through the Kalutara District Coordinating Committee (DCC).

Committee are also forwarded to the DCC which has representation of key policy makers in the district.

Progress since 2003:

The meetings held with the Galle and Matara District administration during the Periodic Review Process showed excellent potential to support sustainable development within the TZ of the SBR by strengthening the CBOs already set up using the various schemes for economic and agricultural development in the Galle and Matara districts where much of the SBR TZ is positioned. The advantages of doing so, and the potential of the SBR to guide environmentally friendly district development (particularly tourism) was clearly perceived by the District Secretariats. It is expected that the SBR managers take advantage of this opportunity in the future. *Closer collaboration was specifically requested by the District Secretariat of Galle.*

2.3.5 Particular vision and approaches adopted for addressing the socio-cultural context and role of the biosphere reserve (e.g. promotion of local heritage resources, history, cultural and cross-cultural learning opportunities; cooperation with local population; reaching out to recent immigrant groups, indigenous people etc.).

While a high priority is given for the biodiversity value of the Sinharaja BR, promotion of cultural values and practices associated with the SBR have not been given equal attention. This was considered at the BR Managers workshop held during this Periodic Review, and activities that can promote cultural values and traditional practices at the SBR were identified. In addition, suggestions were requested at community consultations for this review. They are: Promoting traditional kitul tapping and production of kitul treacle and jaggery; promoting the practice of traditional medicines and ritualistic cures relevant for humans, livestock and agricultural purposes; and promotion of drumming and ritualistic cures that are characteristic of the Ratnapura and Southern provinces. It was noted during the community meetings that traditional practices for agriculture and medicinal use have declined within the SBR, and that such knowledge is in danger of being lost for ever.

The 2009 Sinharaja NHTA Management Plan specifically addresses protection of traditional wilderness-based customs (page 36) recognizes traditional rights of local communities to maintain their customary and spiritual wilderness-based lifestyles (Page 32).

There are several sites of religious, cultural and archeological importance, some of which are devoted to meditation and spiritual enhancement. During the various focus group discussions (N=45), 60% of people cited ancient temples as an important cultural heritage in the SBR; traditional arts and crafts were cited by 40%, and wildlife/wilderness based traditions were cited by 60%. Most local people believed that the FD could promote the SBR as a cultural heritage through the *Sinharaja Sumithuro* CBOs.

2.3.6 Use of traditional and local knowledge in the management of the biosphere reserve.

Traditional knowledge has been used effectively in the past to increase agricultural yield and eliminate threats from pests, as there were no chemical fertilizer or pesticides. While there are elders with knowledge of traditional ritualistic cures for humans and livestock and for pest control, these are no longer used as people tend to rely more on chemicals which harm the environment and on western medication. At present, reliance on traditional and local knowledge for management of resources in the SBR has dropped, and there is high use of chemical fertilizer and pesticides in the tea lands.

The need to reduce agrochemical use and move towards organic agriculture using traditional practices was discussed with communities and the large plantation sector. Among the communities there is enthusiasm among some to trial organic farming and to use ritualistic practices to prevent pest attack (among tea small holders), although they felt that totally moving away from chemical fertilizer may not be feasible in the short term. The plantation managers were less optimistic about the cost effectiveness of organic tea, but the tea exporter sector at the planters' meeting was more optimistic. This matter is due to be discussed in the workshop for the private sector scheduled for 2014.

2.3.7 Community cultural development initiatives. Programmes and actions to promote community language, and, both tangible and intangible cultural heritage. Are spiritual and cultural values and customary practices promoted and transmitted?

The FD field staff recognize the importance of the SBR to promote cultural heritage (outcome of workshop 1 for BR Managers and SBR management plan). The Kudawa Conservation Centre (KCC) organizes the traditional celebration of the Sinhala and Tamil New Year with its associated cultural practices and traditional games. Six villages at the northern boundary of the reserve participated last year and the event was funded by local hotels and the jeep owners' association. This promotes the transmission of cultural practices that are getting eroded with economic development.

2.3.8 Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve. Has there been a change in the number of spoken and written languages? Has there been a revitalization programme for endangered languages?

Sinhala is spoken by the main ethnic group (Sinhala population=61%), and Tamil is the language spoken by Tamils, Moors and Malays (population 39%) in the SBR. However, English is spoken by many individuals. All persons at the focus group discussions said that there are no endangered languages.

2.3.9 Management effectiveness. Obstacles encountered in the management/coordination of the biosphere reserve or challenges to its effective functioning.

Overall, there is effective management of the SBR in terms of its conservation, and logistic functions by way of facilities and programmes for research and education. While the development function had declined since the closure of the South West Rainforest Participatory Project, activities associated with the periodic review process and measures taken to address needs for community participation in BR conservation and management throughout 2013 have yielded good results and a revival of community interests in the CBOs. The SBR management is keen to further the development function of the reserve and there is good indication that the district administration will support this at the southern boundary. There is also a strong move to enhance the development functions of the TZ at the northern boundary as explained above and in section 5. *This needs to be monitored and supported by the National MAB Committee.*

However, one point that could be better addressed is the fact that the SBR is managed by 3 Forest Divisions (See sections 2.3.4 networks within the FD). While this structure has increased the effectiveness of forest protection and hence the conservation function, the budgeting and planning for the SBR occurs at 3 district or divisional levels. As such, it prevents a holistic planning for the entire reserve, particularly with regard to enhancing cultural heritage aspects and the logistic and development functions. While this has not in anyway decreased the effectiveness of biodiversity conservation or jeopardized its logistic functions, better coordination can position the SBR as a more functional Biosphere Reserve. This will occur if there is a single SBR manager who is accountable for planning and implementing the functions of the SBR, while protection can occur as at now. This matter has been discussed with the FD and it is being looked into (see 2.2.7)

The following indicators were used with the local communities to assess management effectiveness. Their responses, and discussions with BR managers, indicate that engagement of local people has greatly increased the management effectiveness of the SBR compared with the policing approach employed before the South West Rainforest Participatory Project. Consequently illegal activities such as encroachment and illegal tree felling that threatened the CZ of the SBR are halted. While the legal status of the CZ does not permit gathering of forest resources, some activities that do not threaten the forest are permitted unofficially based on understanding between the communities and the Forest Department. Examples are: kitul tapping (can be done with a permit); collection of *beraliya* (a *Shorea* sp. which produces fruit once in 5-6 years and is seasonal), collection of mushrooms from specific mushroom sites in the forest which are also seasonal and fetches about Rs 600/kg (about US\$ 5/kg) and taking water from the reserve. Some kitul tapping is also done without a permit but no action is taken as this is not considered harmful *per se*.

The following are responses by the local people to indicators that assess management effectiveness of the CZ.

Table 3: Indicators of management effectiveness

N= 40 persons consulted for this set of indicators in questionnaire 3³⁵

Indicators of management effectiveness	Percentage Response				
	Totally agree	Agree	Moderately agree	Disagree	Totally Disagree
a. The participatory management approach adopted by the FD since the GEF rainforest project has helped forest conservation.	17.5	62.5	20		
b. There is good understanding now between the FD and local people around the SBR.	2.5	75	22.5		
c. Communities now have a voice in conserving/managing the SBR.			2.5		97.5
d. Communities are confident that the FD will communicate to them major decisions regarding the SBR and consult on necessary action. <i>In 2003, 60% of all community members questioned were largely/totally confident that the Forest Department will communicate to them major decisions regarding the Sinharaja forest and consult them on necessary action; 26% disagreed, and all were from outside the nine participatory management pilot sites.</i>	50		50		
e. SBR managers prohibit extraction of non-timber resources even when it is not a threat to the forest.	100				
f. Local people extract resources from the forest in the SBR	100				
Forest resource use:					
g. Local people are permitted to use traditional footpaths through the BNP by the reserve managers.	100				
h. Local people are permitted to engage in non-destructive traditional forest use activities within the BNP (Respondents did say that forest extractions such as cutting trees, cutting poles and posts, collecting firewood are not allowed, but kitul taping, collecting mushrooms, collecting the very seasonal <i>beraliya</i> fruit, and collecting small amounts of medicinal plants for household use is not stopped).				95	05
Threats - trends during the past 10 years					
i. Illegal activities have been reduced in the Sinharaja forest during the past 10 years	100				
j. There are still some threats to the Sinharaja forest from villagers					100

³⁵ Different sets of indicators were tested at different focus group discussions at various locations. This was at the 6th FG discussion

During the various focus group discussions (N=45), 100% of respondents stated that there was no new encroachments into the CZ, and that hunting was small scale and purely for domestic use or crop protection. About 60% of respondents felt there was small scale tree felling for domestic use as opposed to 40% said there was no felling at all. However, the trees extracted were from the periphery and not large valuable timber species.

According to reports of local people, there were small scale forest extraction of NTFPs, but all collection had decreased during the past 10 years, mainly due to better law enforcement. Here, it was said that the law enforcement had been made more effective due to awareness programmes, and the linkages with the FD staff (who had also promoted livelihood development), as communities did not want to be caught by a known officer while engaged in an illegal activity. Potential offenders also knew that someone in the village would report them. The exception was collection of arecanut fruit which was increasing, and there appeared to be no problem with law enforcement. In the case of some extractions like hunting the reduction was also attributed to a resurgence of religion (Buddhism); in the case of medicinal plants the reduction was also due to people moving towards western medication; in the case of firewood also because people were moving to other forms of fuel such as gas for cooking; and in the case of bamboo, cane, gum etc. the lack of markets had also reduced collection.

Overall there have been no major problems for effective management as yet. See section 4.

2.4 Comment on the following matters of special interest in regard to this biosphere reserve: (Refer to other sections below where appropriate).

2.4.1 Is the biosphere reserve addressed specifically in any local, regional or/and national development plan? If so, what plan(s)? Briefly describe such plans that have been completed or revised in the past 10 years.

The Sinharaja BR is specifically considered in the Southern Province Biodiversity Profile and Conservation Action Plan published by the Biodiversity Secretariat of the Ministry of Environment and Renewable Energy in 2008 (Gunawardena, 2008). The National Physical Planning Policy and Plan Gazetted in 2011³⁶ has categorized the region in which the SBR occurs as an environmentally sensitive area where development has to be controlled. The CZ of the SBR also falls into Category I in the NPPP&P - which are Restricted Areas where new development in Protected Areas of this category will be prohibited.

2.4.2 Outcomes of management/cooperation plans of government agencies and other organizations in the biosphere reserve.

All plans have to take into consideration the Sinharaja National Heritage Wilderness Area which is the CZ of the SBR and is also a World Heritage Site. The new zonation plan of the SBR has been provided to the district administration and it is expected that future regional planning will take note of all zones of the SBR. This has to be monitored by the FD.

2.4.3 Continued involvement of local people in the work of the biosphere reserve. Which communities, groups, etc. How are they involved?

The 2003 Periodic Review showed a discernible change in forest policy (i.e. policy of 1995) in terms of interaction with peripheral communities - as opposed to the top down policing approach of the FD in the 1980s. This has progressed further and communities in the southern boundary of the Sinharaja NHTWA in the villages of Keeriwelgama, Dehigampola, Mederipitiya, Wathugala, Warukandeniya, Thambalagama and Kosmulla where the South West Rainforest Participatory project was successfully implemented have become involved to varying degrees in the work of the SBR.

Unlike earlier, it is they who now inform the FD field staff of illegal activities, and if no immediate action is taken, they inform the district FD staff or Headquarters staff, or even the police. This

³⁶ The Gazette Extraordinary of the Democratic Socialist Republic of Sri Lanka No. 1729/15 - Thursday, October 27, 2011

change is attributed to the impacts of the social mobilisation and education and awareness activities of the South West Rainforest Participatory Project which operated from 2000-2007, in addition to the economic benefits people received from the project. Every GN division in which this project was operational has a sizeable group of people who watch out for adverse forest practices, so that encroachment for tea which was a major problem has been stopped and tree felling is reduced to the extent that it is very rarely that a tree (not valuable timber) is cut for household use (e.g. dead wood for firewood or a handle for an agricultural implement- the mammoty, or for a house repair).

However, the attendance at CBO meetings has dropped sharply since project closure in 2007, as organized activities through the CBOs have ceased. While phasing out by the FD from CBO activities at project closure was built into the project design, this is an aspect of the project that has not worked. The people want the FD officers to participate more fully in the CBO activities. The FD has responded by having extension officers attend the monthly CBO meetings, but they are constrained by not being able to contribute more positively to the CBOs due to lack of funds. The PCC has initiated English classes for students and sewing classes for women to keep the membership satisfied, but as these initiatives are done with the normal FD budget the scope for further action has been limited. However, the FD field staff are keen to keep alive the links with the CBOs.

The parallel process by the National MAB Committee to help BRs achieve quality BR status addressed this need. The links established during the review with the District Administration can energize the CBOs by channeling economic development initiatives of the state and agricultural sector through these CBOs (this was deemed possible by district administration, and is expected to be followed up by the FD). *Progress will be monitored by the National MAB Committee*, which is also seeking to link the SBR with potential private and public sector partners through meetings and workshop.

Reasons for continued involvement (despite the drop in CBO activities) are as follows:

1. Livelihood support provided through the project to get increased income from existing livelihood - in this case tea cultivation in small holdings. The main reason for forest encroachment was to boost income by increasing the holding size. The project provided training for tea small holders to get more income from the existing holdings through better cultivation methods and provided soft loans to improve the tea holdings via a revolving fund (through Community Trust Funds established in the CBOs. This proved to be the main reason for attracting people to participate in the project. Reportedly people who plucked tea once a month started plucking tea every 5-6days due to better cultivation practices.
2. Better awareness provided through the project about the SBR and its value as a natural heritage and its importance as a source of water and climatic conditions for crops which are important for this agricultural community.
3. Past support for the CBOs from the FD officers and project officers, as well as the enthusiasm generated among the CBO members during the project has helped maintain the positive outcomes of the project up to now. The good relationships formed was crucial and have largely remained.
4. Support for alternative livelihoods through a loan scheme funded by the revolving funds set up for each CBO enabled people to start small cinnamon and banana plantations, beauty culture, driving vehicles, and other jobs (training was also provided) in addition to tea cultivation. The community also continues to derive a good income from the fruit trees distributed through the GEF SW Rainforest project.
5. Non-livelihood benefits: CBOs were provided metal sheets, chairs, etc. to preclude the need to cut forest trees to make tents, etc. during weddings, funerals and other ceremonies; development of roads, repairing streams (sources of water), religious activities, etc. during the project. Computer and English classes for CBO members or their families proved to be hugely popular and are still being funded through the PCC. Sewing classes for women members also are continuing and proving to be popular.

At the northern boundary where the South West Rainforest Project was not carried out, the Staff at the Kudawa Conservation Centre use the 27 volunteer guides (including two women) as entry points into the local villages and by organizing cultural and religious events in which local people participate and the distribution of commercially important plants and fuel efficient cookers.

However, as this is not as effective as the work carried out through CBOs via the GEF model, The FD is engaged in setting up a CBO on this model in the Kudawa GN division of the TZ.

During this review and the GEF Portfolio Review, the CBOs set up under the South West Rainforest Participatory Project were contacted to assess the level of community involvement before the project, at project closure, and in 2013. The relationship between local people and FD officials was considered unsatisfactory by 75% and satisfactory by 25% before the GEF funded Rainforest Participatory Project (i.e. before 2000). In contrast, all thought the relationship was highly satisfactory when the project ended in 2007, but as at now, it was considered moderate by 50% and satisfactory by 50% (see Table 8, and analysis elsewhere).³⁷ Overall, the people are still very appreciative of the economic and other benefits they received through the GEF project as well as the awareness provided and the good relationship built with the FD field staff.

BOX 2: Quotes from the community consultations

GEF Review:³⁷

“Before the project people had no understanding about the importance of conserving the forest. They just came [to meetings] because of the money given. When the awareness was given, when they got to know something, bad things automatically stopped. So awareness is important”

“Before the project, we did not have much understanding. We had certain knowledge. But we did not have a mechanism to work on it.”

“Sometimes landslides happened in the rainy season. We did not know why they happened.”

“ In the earlier days, we did whatever was needed to fulfill our needs. We would even cut a huge tree to take a bee hive.”

“The Dehigampola people worked hard during boundary marking. We carried border posts right up to the Sinharaja forest.” [regarding participatory boundary marking].

“the connection made with the forest officers was important”. This also keeps the officers up to the mark as well.

“In the past, they only came to the village if there was a need to arrest somebody. There was no close relationship with us like we have now.”

During the MAB review³⁸:

“ We were made aware of the importance of the forest by the FD through lectures and films. Earlier, when we needed to build a hut for a ceremony, we used to damage the forest. Now we have been given tents and huts through the project, so we don’t need to damage the forest any more.

“Through awareness we gained, we were able to get knowledge on how to protect the environment.”

2.4.4 Women’s roles. Do women participate in community organizations and decision-making processes? Are their interests and needs given equal consideration within the biosphere reserve? What incentives or programmes are in place to encourage their representation and participation? (e.g. was a “gender impact assessment” carried out?) Are there any studies that examine a) whether men and women have different access to and control over sources of income and b) which sources of income do women control? If so, provide reference of these studies and/or a paper copy in an annex.

There was 100% agreement at the focus group discussions with communities (N=45) that the participation of women in decision making for SBR activities had changed positively in the last 10 years. This was attributed to the many women’s groups that have been formed in the SBR as part of a government exercise in many districts of Sri Lanka. The FD is also increasing the number of women guides at the KCC. Many of the CBOs formed by the South West Rainforest Participatory Project had women office bearers, especially as the treasurer.

The literacy rates for women in Sri Lanka are equally high among women and men, and the districts where Sinharaja is positioned are no exception. Women have equal access to and control of

³⁷ The review of the GEF Portfolio in Sri Lanka carried out by the Centre for Poverty Analysis (CEPA) on behalf of GEF and the Government of Sri Lanka in which the Sinharaja Periodic Review Consultant participated.

³⁸ Source: Interviews with members of the Rainforest project CBOs in 2013 by the MAB Review Team.

resources in the SBR as do men, as decreed by the constitution of Sri Lanka which accords equal status to men and women. Women can control any incomes that they accrue from livelihood activities. Women play a major role as wives and mothers but are also wage earners along with the men. Most small holdings of tea are worked by family labour and both women and men participate equally in this activity. The KCC is seeking to enhance the percentage of female guides to at least 30% of the service, while the PCC funds sewing classes for female members of the CBOs established under the SW Rainforest Participatory project in a bid to cater to the needs of women in the SBR.

2.4.5 Are there any changes in the main protection regime of the core area(s) and of the buffer zone(s)?

There is no change in the protection regimes of the Core Zone since the 2003 review, and will not change in the future. With the annexing of lands being surveyed for inclusion in the BZ of the SBR (see Parts 1 and II: item (p) other recommendations), regenerating forests in lands belonging to the Land Reform Commission (LRC) and some private lands will be brought under the management of the Forest Department. As such they will receive better protection under the Forest Ordinance.

2.4.6 What research and monitoring activities have been undertaken in the biosphere reserve by local universities, government agencies, stakeholders and/or linked with national and international programs?

Much of the research work has been done by the Universities of Colombo, Ruhuna, Peradeniya, Kelaniya, and Sri Jayawardanapura and the Open University of Sri Lanka; an NGO: Environmental Foundation Ltd., government departments such as the Department of National Botanical Gardens, Archaeological Department, Department of Agriculture, Institute of Fundamental Studies and the Industrial Technology Institute. The list of research activities carried out by the SBR since 2003 is given in Annex 4.

Links with international programmes:

The Sinharaja BR has been a member of a global network of forest research plots, where long-term studies on the diversity and functioning of forests are being examined, under the sponsorship of the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI). This includes assessing:

- Carbon and Nitrogen Cycling Processes along a small-scale topographic gradient in a 25 ha forest Dynamic Plot at Sinharaja, Sri Lanka.
- A Topographic Comparison of Soil Nutrient status in relation to habitat specialization in the 25 ha Forest Dynamic Plot at Sinharaja.
- On going project in the Sinharaja 25 ha forest dynamic plot for growth performance of selected canopy species under different light & moisture regimes & phenological studies.

Links with national initiatives:

- Sinharaja BR has been used by researchers from the University of Colombo and the NGO - Field Ornithology Group - as a pioneer project for national reconciliation by bringing in school children and their staff from the Northern Jaffna district to learn about rain forest ecosystems unique to South West Sri Lanka, and to give the students an experience of the local livelihoods of villagers around Sinharaja BR as the base to promote national peace and security. This is funded by a business partner Dilma Corporation.

Training youth

- The 25 ha CTFS Forest Research Plot and other sites in Sinharaja BR are being used in analyzing ecosystem services (carbon sequestration, canopy species pollination periodicity, and other plant-animal interactions). Local village youth are trained and given priority to assist these field research initiatives. This has also helped with job training and economic development.

More details are provided under section 6.

2.4.7 How have collective capacities for the overall governance of the biosphere reserve (e.g. organization of new networks of cooperation, partnerships) been strengthened?

The capacity of the Forest Department has been considerably strengthened via many initiatives, such as the ADB funded Forestry Resources Management Project (FRMP), the Sri Lanka Australia Natural Resources Management Project (SLANRMP) and the South West Rainforest Participatory Project as well as the GEF funded South West Rainforest Participatory Project. More capacity enhancement is expected under the UN REDD+ Preparatory Project which is ongoing.

BOX 3: Capacity enhancement in the FD

- *The ADB funded Forest Resources Management Project (FRMP)*

Under this project, there was capacity building of the Forest Department (FD) which was the main beneficiary, through targeted awareness and extension, agroforestry, rehabilitation of degraded forests, buffer zone development through participatory community programmes, and boundary demarcation of natural forests and forest plantations. Skills training included technical assistance (TA) provided to the FD in the form of expatriate and local senior level expertise in the fields of forestry education, forest management and the revision and improvement of the curricula at the Sri Lanka Forestry Training Institute (SLFTI). Assistance was specifically provided for integrated management planning and biometrics, planning and project implementation, data collection and collation, database development and management via technology development (for GIS databases); public awareness and extension, developing technology for research, ecosystem and biodiversity management; participatory forestry and institutional capacity building, and improving the database established through the National Conservation Review (NCR) which was a biodiversity assessment of natural forests in the country during the mid 1990s. Overall, about 500 FD staff received special training and skills development through this project. The project also had a programme for capacity building on an annual basis, through both local and overseas training.

The FRMP also provided equipment and other facilities in-kind, including computers and equipment for field survey, inventory and communication. Financial assistance was provided to the FD to enhance nature based tourism at Sinharaja, Knuckles and Kanneliya forest reserves with the involvement of local people.

- *The Aus-Aid funded Sri Lanka - Australia Natural Resources Management Project (SLANRMP) for poverty reduction through improved natural resource management*

This project was active in two Dry Zone areas of the Kurunegala and Matale districts since February 2003 - 2008 to support communities improve the management of natural resources through a participatory and holistic approach. The project aimed for institutional capacity enhancement and human resources development in the forestry sub-sector. The project also aimed to pilot handing over the management of degraded forest patches to communities in adjacent villagers who would benefit from enhanced household incomes due to improved land use and integration of forestry and agriculture. The project specially targeted communities that were dependant to varying degrees on the adjacent forests for their livelihood, and were thus willing to accept responsibility for community management of forests in exchange for forest user rights. Women and disadvantaged members were given special attention.

- *The GEF/UNDP funded South West Rainforest Conservation Project of the Forest Department (2000-2007)*

This project pilot tested the development of a viable participatory management model for conservation forests in Sri Lanka, and was functional in buffer zone villages along the southern perimeter of the Sinharaja Forest Reserve and the perimeter of the Kanneliya Forest—two forests within Sri Lanka's PA system as well as BRs. The project built capacity in the Forest Department for community mobilisation and formal registration of CBOs with the Divisional Secretariats. The model took into account the high conservation status of the relevant forests, the level and type of forest dependency among local people, and the national forest policy. The CBOs assisted the Forest Department to work out appropriate systems for delivery of assistance (for each village) as deemed required for social upliftment and to reduce forest dependency (including encroachment) by improving local livelihoods.

Source: MoE (2010). Sector Vulnerability Profile for Sector Vulnerability Profile: Biodiversity and Ecosystem Services.

2.4.8. Please provide some additional information about the interaction between the three zones.

Much of the BZ is under the management of the Forest Department and comprises forest plantations and natural forest.

The most productive interaction between the three zones has been through the community participation component of the South West Rainforest Participatory project described above in Box 3. Here communities in the TZ (and CZ) are actively involved with supporting conservation of the CZ.

At the northern boundary where the South West Rainforest Project was not carried out, the staff at the Kudawa Conservation Centre use the 27 volunteer guides as entry points into the local villages and organize cultural and religious events in which local people participate (Sinhala and Tamil New Year; *Pirith* or religious ceremonies for Buddhists), blood donation camps, etc. Further, the KCC provides and promotes use of fuel efficiency cookers to reduce the need for firewood as removal of even dead wood from the forest can interfere with nutrient recycling. Recently, 100 fuel efficient stoves were distributed to reduce firewood dependency on forests. The FD staff plan to extend this activity to 22 peripheral villages some of which are outside the SBR.

During the 2003 review no interaction was seen between the large plantations and the BR managers, but this sector has now been engaged. The major plantations will be members in the coordination committees of the SBR to be convened by the FD.

2.4.9 Participation of young people. How were young people involved in the organizations and community decision-making processes? How were their interests and needs considered within the biosphere reserve? What are the incentives or programs in place to encourage their participation?

- The 27 volunteer guides at the KCC and 19 at the PCC are local youth (2 are female guides).
- The 25 ha CTFS Forest Research Plot and other sites in Sinharaja BR are being used to analyze ecosystem services (carbon sequestration, canopy species pollination periodicity, other plant-animal interactions). Local village youth are given priority in assisting in these field research initiatives. The knowledge they gained through such participation is considerable, and has helped them to be recruited as visitor guides at Sinharaja. In turn, researchers too have benefitted from their indigenous knowledge.³⁹
- The South West Rainforest Project assisted youth by way of leadership training and job training. Some were absorbed into the project as social mobilisers and later absorbed into the permanent staff of the FD as extension offices. Others have moved away from the village as they got jobs due to the job and leadership training they received.

³⁹ Personal communication by Prof. IAUN Gunatilleke and Prof. Savitri Gunatilleke

3. ECOSYSTEM SERVICES:

3.1 If possible, provide an update in the ecosystem services provided by each ecosystem of the biosphere reserve and the beneficiaries of these services.

(As per previous report and with reference to the Millennium Ecosystem Assessment Framework and The Economics of Ecosystems and Biodiversity (TEEB) Framework (<http://millenniumassessment.org/en/Framework.html> and <http://www.teebweb.org/publications/teeb-study-reports/foundations/>)).

Table 4: Ecosystem services provided by the SBR

Service Type	Details of service	Beneficiaries
<ul style="list-style-type: none"> ● <i>Supporting services (that help maintain the conditions for life on earth):</i> 	<ul style="list-style-type: none"> ● Clear improvement of supporting services of the reserve - through regeneration of forests logged in the 1970s. ● Habitat for many species (many of which are endemic, relict, rare or threatened with extinction). ● Habitats for pollinators and natural enemies of agricultural pests. ● Habitats for plants producing products for pest control (e.g. <i>Dipterocarpus glandulosus</i> resins) ● Important watershed functions. (e.g. The Sinharaja Forest covers the upper watersheds of the <i>Gin Ganga</i> and <i>Kaluganga</i> which are important sources of water in the country). 	<ul style="list-style-type: none"> ● Local, national and global communities and other life forms living in and around the BR
<ul style="list-style-type: none"> ● <i>Regulatory services (i.e. benefits from regulation of ecosystem processes):</i> 	<ul style="list-style-type: none"> ● No major changes have been seen in the regulatory services of the reserve. ● Services such as air quality maintenance, climate and water regulation, flood and erosion control, water purification, and storm protection, continue. ● Importance for flood control and soil erosion control continues to be high. ● By blocking large amounts of C in the forest trees, contribution to mitigate global climate change (C sink capacity) 	<ul style="list-style-type: none"> ● Local and National and communities and other life forms living in and around the SBR ● Particularly important for tea small holders ● Global community
<ul style="list-style-type: none"> ● <i>Provisioning processes</i> 	<ul style="list-style-type: none"> ● Provides for tourism which has increased during the past 10 years, and has enhanced livelihoods of local people. ● <i>Kukuleganga</i> hydro-electric power project depends highly on the water outflow of the Sinharaja forest. ● The most important forest product used by villages is water for domestic and agricultural requirements. Rainfed agriculture is practiced in the fertile lands of the TZ - the forest helps maintain the water balance in the soil in adjacent lands and controls run-off. ● Reservoir for crop germplasm (e.g. <i>Myristica fragrens</i>, cardomom, wild pepper, cinnamon, etc. ● Provides medicinal plants and products, ornamental plants (e.g. orchids, pitcher plants, aquatic ornamental plants, etc.) and other NTFPs obtained by local people: Food (e.g. kitul products [jaggery, treacle, local 	<ul style="list-style-type: none"> ● Local, National and global communities and other life forms living in and around the SBR. ● People engaged in tourism centred on the SBR. ● Local farmers and rice consumers in the country ● National crop improvement programmes and national rice consumers ● Local people

Service Type	Details of service	Beneficiaries
	beverages], carbohydrates [flour from kitul, <i>Shorea</i> fruits, <i>Vateria</i>], edible mushrooms); medicinal products; leafy vegetables (e.g. <i>Costus</i> , <i>Blechnum</i> , etc); oils and resins for lighting (from <i>Canarium zeylanicum</i> seeds, <i>Dipterocarpus glandulosus</i> resins); insect repellents; roof thatching for wattle and daub huts (<i>Agrostistachys</i> spp.) - but this latter use is distinctly on the wane with socio-economic advancement of local people.	<ul style="list-style-type: none"> Mainly local people
<ul style="list-style-type: none"> <i>Cultural services (i.e. non-material benefits obtained from ecosystems)</i> 	<ul style="list-style-type: none"> Environmental education and imparting knowledge by work carried out by SBR staff. Educational facilities and visitor services have been enhanced. Local people have indigenous knowledge for the use of various NTFPs (e.g. methods to prepare jaggery, treacle, local beverages from kitul); obtaining and preparing flour based food from kitul pith, <i>Shorea</i>, <i>Vateria</i> fruits; knowledge of edible mushrooms, knowledge of the properties of medicinal plants/products and ritualistic cures for various ailments; cooking leafy vegetables (e.g. <i>Costus</i>, <i>Blechnum</i>); using oils for lighting (e.g. <i>Canarium zeylanicum</i> seeds, <i>Dipterocarpus glandulosus</i> resins); use of insect repellents for temple paintings (<i>Dipterocarpus glandulosus</i> resins); preparing roof thatching out of forest leaves (e.g. using <i>Agrostistachys</i> spp. etc.) There is a definite sense of place and heritage by the communities (especially those which were engaged by the FD through the SW Rainforest Participatory Project). 	<ul style="list-style-type: none"> People living near the SBR Local, national and global community

Source: Sinharaja BR group of the Biodiversity Experts Workshop to support the Periodic Review

3.2 Specify if there are any changes regarding the indicators of ecosystem services that are being used to evaluate the three functions (conservation, development and logistic) of the biosphere reserve. If yes, which ones and give details and update.

There were no specific indicators used earlier, but several were developed in collaboration with biodiversity experts who have worked at Sinharaja BR. They are given below:

Table 5: Indicators of ecosystem services used to evaluate the three functions of the biosphere reserve

Validation of examples with indicators was done at the Experts' Workshop from long term observations of visiting experts on animals (Dr Enoka Kudavidanage and Mr Kelum Manamendraarachchi) and plants (Prof. CVS Gunatilleke, Dr H Kathriarachchi K., Dr S. Ratnayake, Dr A. Attanayake). They were used to assess the conservation function of the SBR.

Indicator	Examples and analysis
A change in abundance of threatened plant/animal species in the past 10 years	<ul style="list-style-type: none"> The endemic blue magpie population (relatively rare in 2003) has perceptibly increased (i.e. more frequently seen) due to regeneration of logged forest Good regeneration of climax forest spp. (e.g. <i>Shorea</i> spp.) in the selectively logged forest areas

Indicator	Examples and analysis
	<ul style="list-style-type: none"> Increased records of direct developing frogs due to regeneration of logged secondary forests.
There is a marked change in species diversity of a particular group during the past 10 years	<ul style="list-style-type: none"> Mixed species bird flocks seen in high forest are now seen more frequently. A perceptible decrease in regenerating <i>Calamus</i> spp. which is an indicator of forest disturbance - supports the theory that the logged forest areas are regenerating.
There has been a marked change of some indicative species	<ul style="list-style-type: none"> Decrease of species indicative of forest clearings/disturbance (e.g. <i>Clidemia hirta</i> (an invasive species), <i>Pennesetum</i> spp., <i>Arundina graminifolia</i>, spp.) which were previously abundant found along logging roads within reserve. This is due to increased canopy closure.
Formerly rare species are now abundant	<ul style="list-style-type: none"> The frogmouth (<i>Batrachostomus moniliger</i>) can be seen more easily /frequently now than before.
Formerly abundant species are now rare/absent	<ul style="list-style-type: none"> The formerly relatively abundant light needing invasive species <i>Clidemia hirta</i> is now rare (which is a positive feature).
A perceptible change in climax forest structure in the past 10 years	<ul style="list-style-type: none"> The overhead tree canopy cover in disturbed areas has perceptibly increased.
The climax forest structure been stable in the past 10 years	<ul style="list-style-type: none"> The climax forest structure in undisturbed primary forest has remained stable, but the canopy cover in disturbed areas has improved.
There been an increase of climax species density	<ul style="list-style-type: none"> The following climax species show increased density underlining the improved conservation status of the CZ: <i>Xylopia championii</i>, <i>Shorea</i> spp., <i>Mesua ferea</i>, <i>Dipterocarpus zeylanicus</i>
Secondary species have decreased in the past 10 years	<ul style="list-style-type: none"> Secondary plant spp. (e.g. <i>Melestoma malabathricum</i>, <i>Osbeckia octandra</i>, <i>Clerodendrum infortunatum</i>) have decreased.
<ul style="list-style-type: none"> Indicators of threats 	
Change in the degree of threats in the past 10 years	<ul style="list-style-type: none"> Increasing number of visitors each year to the CZ which can become unsustainable. Increase of smallholder tea gardens in BZ and TZ which is replacing small holder rubber plantations of the past. Tea does not have a canopy cover so that there is an abrupt transition from the forest to tea lands for arboreal species living at the forest edge.
Change in habitat quality of CZ	<ul style="list-style-type: none"> As disturbed areas within the forest regenerate, the faunal/ floral composition between TZ (where the reserve grades directly into the TZ) and formerly disturbed peripheral areas outside the CZ are becoming distinctly different.
Change of habitat quality in the BZ	<ul style="list-style-type: none"> More good quality forests are now included in the BZ, but they were not formerly within the SBR for comparison.
Change of habitat quality in the TZ	<ul style="list-style-type: none"> Habitat quality in TZ has decreased due to increase of monoculture tea gardens and reduction of rubber.
Change in dependency of peripheral communities on natural forests	<ul style="list-style-type: none"> Collection of NTFPs by peripheral communities has decreased. <i>Caryota urens</i>, <i>Calamus</i> spp., <i>Vateria copallifera</i>, <i>Elettaria cardomum</i> var. major, <i>Coscinium fenestratum</i> are now no longer over harvested.

Indicator	Examples and analysis
Invasive species have increased/decreased in the past 10 years.	<ul style="list-style-type: none"> Invasive species such as <i>Panicum maximum</i> and <i>Clidemia hirta</i> have decreased inside the CZ due to canopy closure in previously logged areas.
	<ul style="list-style-type: none"> Increased presence of <i>Alstonia macrophylla</i> in the peripheral areas of the CZ in Southern Sinharaja. (Source: Jayasuriya and Abeywardena, 2008) is a matter of concern. †
Change in adverse human impacts on the CZ	<ul style="list-style-type: none"> Encroachment and large scale tree felling have been halted. Occasionally a tree may be felled at the forest periphery for domestic use - these are often <i>Alstonia</i> (invasive spp.) and not climax species (Community consultations). †

Source: Sinharaja BR group of the Biodiversity Experts Workshop to support the Periodic Review except for†

3.3 Update description on biodiversity involved in the provision of ecosystems services in the biosphere reserve (e.g. species or groups of species involved).

Table 6: Diversity of plant and animal taxonomic groups recorded in the Sinharaja BR during the past 10 years

Faunal group	Total Native Species in Sri Lanka	Total Species in Sinharaja** During the 2006 survey	% endemism and (Threatened spp) in the SBR	Total species recorded in the 2003 periodic report
Fish	91 (50E, 45T)	46 (25E, 22 Nat.T)	54.3(47.8)	19 (10 E)
Amphibians	111(95E, 73T)	52 (43E, 40 Nat.T)	82.7 (76.9)	27* or 33 (19 or 23 E) according to different classifications
Reptiles	211 (124E, 107T) †	95 (53E, 40 Nat.T)	55.8 (42.1)	71 (35 E)
Birds (*with migrants)	453* (27E+6 PE, 67T)	125* (24E, 26 Nat.T)	19.2 (20.8)	147 (22/23 E)
Mammals	94 (21E, 53T) ††	41 (11E, 20 Nat.T)	26.8 (48.8)	44 (8 E)
All vertebrates	961 (317, 345)	359 (156E, 148 Nat.T)	43.5 (41.2)	-
Butterflies		119 (17E, 37 Nat.T)	14.3 (31.1)	-----
Land snails		24 (19E, 12 Nat.T)	79.2 (50.0)	-----
Flowering plants*		331 (171E, 140Nat.T)	51.7 (42.3)	} 337 (57% endemic)
Woody plants †		205 (145 E, 59 Nat.T)†	70.7 (28.8)	
Woody plants ‡		327 (179 E)	54.7(NA)	

Sources: Fauna: List from Bambaradeniya et al, 2006 updated by participants of the Biodiversity Experts' workshop. The above floral data are from a list provided by Dr Hashendra H Kathirarachchi using classifications and data from the 2012 National Red List; other data from † Source: Jayasuriya & Abayawardana (2008)†, and lists of woody plant species subject to long-term phenological study by Gunatilleke and Gunatilleke.‡
[E= endemic, Nat.T = nationally threatened, GT = Globally Threatened]

Sinharaja has a mosaic of vegetation types. In addition to the primary and secondary tropical lowland wet evergreen forests for which it is world renowned, it also has sub-montane forests and grasslands (FD/MoERE,2009), freshwater systems, rocks and other ecosystems which contribute to a range of habitat types, and hence its high species diversity. A Biodiversity Monitoring Survey in 2008 recorded 205 woody plant species (see Table 6), inclusive of 145 endemics and 59 Nationally Threatened species (Jayasuriya & Abayawardana, 2008). Through the survey was not as exhaustive as the National Conservation Review (NCR), a high degree of endemism is seen among the Sinharaja flowering plants. Likewise, a high degree of endemism is shown among 327 species of woody species recorded only in western Sinharaja. The updated list of flowering plants which emanated from participants of the expert's workshop shows a 331 flowering plants, of which >50% are endemic and >42% are nationally threatened.⁴⁰ The floral lists are in Annexes 5a and 5b. The updated faunal list is in Annex 6.

The Sinharaja forest has been classified as a tropical evergreen forest, with forests ranging from lowland to sub-montane tropical forests. Within the lowland forests there are three main vegetation types ranging from the lower slopes and valleys (150 m - 600 m), to middle slopes (>600 m - <1000 m), and upper slopes and ridges (>1,000 m). Each vegetation type has distinct species and structural variations: *Dipterocarpus* communities in the lower areas, *Messua-Shorea* communities in the mid slopes to sub-montane vegetation in the upper slopes where typically stunted montane vegetation occurs in the exposed summits (de Zoysa and Raheem, 1990). The eastern section of the reserve has sub-montane forests and grassland habitats. Thus the reserve shows considerable micro-climatic differences within a relatively small spatial area (MOFE, 1999), and no single area of the forest is representative of its entirety, highlighting the extremely high biodiversity value of this forest (Gunatilleke and Gunatilleke, 1981). As such, there are many point endemics, and distinct species differences among the flora at different sites, particularly obvious in the canopy and sub-canopy (De Zoysa and Raheem,1990).

Table 6 and the following data show the high degree of endemism among flowering plants in the SBR:

Below are species numbers and categories subject to long-term phenological study in the CZ of the SBR [specifically in western Sinharaja] under the supervision of Professors IAUN and CVS Gunatilleke.

Habit categories	Number in each category	Number of endemic species	Number of non-endemic species	Number of species with status unknown
Climbers	2	1	1	-
Herbs	2	2	-	-
Lianas	17	5	12	-
Shrubs	1	-	1	-
Trees	305	179	112	14
Total spp	327	187	126	14

Parts of the reserve's southeastern and eastern boundary were fringed by several large tea plantations and some wild cardamom holdings due to under-planting in forest patches. Some of them are abandoned tea lands which are now reverting back to climax forest, are due to be acquired by the FD. Much of the buffer zone forests also contain secondary high quality climax

⁴⁰ A complete list of flowering plants and vertebrates from all available sources used for preparation of the National Red List of Plants and Animals (2012) is being compiled by the Biodiversity Secretariat of the Ministry of Environment and Renewable Energy and will be available shortly.

forests with a high species diversity. In many places, particular at its southern boundary, the CZ grades directly into home gardens and intensive tea cultivation in private small holdings in the TZ. Many home gardens in these peripheral villages sustain multi-storeyed, multi-species agroforestry systems that are valuable in terms of agricultural biodiversity and contain traditional varieties of crop plants and their wild relatives.

The Sinharaja biota is shaped by the numerous geological upheavals and geographic movements across the equator of the land mass that now comprises Sri Lanka (Tan, 2005). The forests of the wet southwest region, to which the Sinharaja forest belongs, are of exceptional importance as they contain relict Gondwana-Deccan biota (Ashton and Gunatilleke, 1987). The Sinharaja Biosphere Reserve (SBR) is also an important refuge for the conservation of endemic species and ancient lineages that require a relatively undisturbed rainforest habitat for their survival. Sri Lanka's fauna are known to support many ancient lineages (Pethiyagoda, et al, 2006), and the SBR is considerably important for conservation of many relict taxa. For example, Sri Lanka has 11 relict and endemic reptile genera (de Silva, 2006), of which the SBR has 20 species from 8 endemic relict genera (i.e. *Ceratophora*, *Lyriocephalus*, *Lankascincus*, *Nessia*, *Aspidura*, *Haplocercus*, *Balanophis*, *Cercaspis*). Likewise, Sri Lanka is known for a large insular radiation of the Sri Lankan *Pseudophilautus* (Meegaskumbura, 2002 cited in Pethiyagoda, et al, 2006) which show conclusive molecular evidence that they were isolated from the Indian group for the past 5,00,000 years with no biotic exchange (Bossuyt et al., 2000 cited by Pethiyagoda, 2005). It is therefore notable that the SBR has at least 27 endemic species of *Pseudophilautus*. Likewise, the endemic monotypic frog family represented by *Lankanectes corrugatus* at Sinharaja is believed to have evolved before the India-Sri Lanka plate separated from the Madagascar plate in the Upper Cretaceous (Roelants et al, 2004 cited by Pethiyagoda, et al, 2006). Moreover, 29 amphibian species in the SBR are Globally Threatened (BDS/DNBB, 2012), including 19 *Pseudophilautus* spp. Sinharaja also has 4 species of the genus *Cyrtodactylus*, which have never been recorded from Peninsular India, but is found in other parts of south-east Asia up to the Solomon Islands (Batuwita and Bahir, 2005). Sinharaja has 3 species of the relict and endemic agamid lizard genera *Ceratophora* (*C. aspera*, *C. erdeleni*, and *C. karu*) while the other 2 species from this genera are found in the Central Highlands World Heritage Site of Sri Lanka (GOSL, 2008). Likewise, *Nannophrys ceylonensis* from an endemic frog genus is found at Sinharaja, while another species of this genera (*N. marmorata*) occurs only in the Central Highlands World Heritage Site (Ibid).

Overall the Sinharaja BR has more than a third of the vertebrate species in Sri Lanka with 359 species of vertebrates of which 44% are endemic, 41% are nationally threatened. This also amounts to about 37% of vertebrate species in Sri Lanka, and nearly 50% of all endemic vertebrate species in the country. Interestingly, 54% of fishes, 82% of amphibians, and 56% of reptiles found in the SBR are endemic to Sri Lanka (Table 6). Also, 24 of the 33 species of endemic birds and almost half the endemic mammals in Sri Lanka can also be seen here. The closure of canopy cover in the logged forest areas due to regeneration⁴¹ stands testimony to the increase of the SBRs effective conservation function. These augers well for most forest species, particularly the endemics. For example, the population of the endemic blue magpie appears to have increased and they are even moving out of the forest into village areas.

Among the characteristic mammals that occur in the SBR are the leopard (*Panthera pardus*), the rusty spotted cat (*Prionailurus rubiginosus*), and the fishing cat (*Prionailurus viverrinus*), the ring tailed civet (*Viverricula indica*), the golden palm civet (*Paradoxurus aureus*, wild pig (*Sus scrofa*), sambhur (*Rusa unicolor*), three endemic primates: the purple-faced leaf monkey (*Semnopithecus vetulus*), the toque macaque (*Macaca sinica*) and the red slender loris (*Loris tardigradus*), the otter (*Lutra lutra*) and the pangolin (*Manis crassicaudata*). There are also several species of endemic rodents including the Sri Lanka Spiny rat (*Mus mayori*), the Ceylon bicoloured spiny rat (*Srilankamys ohienis*), the flame-striped jungle squirrel (*Funambulus layardi*) and the dusky striped jungle squirrel (*Funambulus obscurus*), and several endemic shrews such as the Sri Lanka long-tailed shrew (*Crocidura miya*) and Sri Lanka jungle shrew (*Suncus zeylanicus*), Sinharaja also has eight species of bats and about 2 of the rare wet zone elephants which inhabit the plains at the eastern end of the Sinharaja reserve. Although in 2003 they were rare visitors to the Morningside Conservation Centre and its nature trails, they are now roaming the entire forest and visiting the KCC and the PCC.

⁴¹ Source: Experts' workshop on the biodiversity aspects of BRs for this review.

The invertebrate fauna in the forest has been relatively less surveyed, but high species diversity is indicated. About 119 butterfly species are recorded, of which 17 are endemic. Among the 24 species of land snails recorded here, 79% are endemic, and 5 are from endemic genera. This is significant as endemic land snails in Sri Lanka are Gondwana relicts of high evolutionary importance (Naggs et al, 2003).

The forest is of value as a reservoir of crop germplasm as indicated by the wild relatives of crops that have been collected from its vicinity. Collections for the PGRC made from the reserve's buffer zone include traditional varieties of cultivated food crops such as rice, finger millet (*Setaria italica*; S: *tana-hal*), banana (S: *marathamalu*) and horse gram (*Macrotyloma uniflorum*; S: *kollu*). Wild mango (*Mangifera zeylanica*), wild durian (*Durio* sp.) wild olive and wild banana (*Musa balbisiana*, Wild ochra (*Abelmoschus* spp.) and cinnamon are some of the species collected from the reserve by the Plant Genetic Resources Centre (PGRC) (MSU Liyanage, PGRC pers. com).

Wild cardamom (*ensal*) was largely collected from the forest for domestic use in 2003, but this practice has declined drastically now (GOSL, 2008).⁴² This was previously under-planted in forest patches of tea plantations - especially in the eastern buffer zone of the Sinharaja Biosphere Reserve.

3.4 Specify whether any recent/updated ecosystem services assessment has been done for the biosphere reserve since its nomination/last report. If yes, please specify and indicate if and how this is being used in the management plan.

- An assessment of faunal species was carried out by IUCN assessment (Bambaradeniya, et al, 2006).
- Ecosystem assessments are carried out through long-term studies on the diversity and functioning of the forests through monitoring of the 25 ha CTFS Forest Research Plot under the sponsorship of the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI).
- A study to determine changes in the biodiversity values of Southern Sinharaja and Kanneliya Forests after the implementation of GEF Medium Sized Project (Jayasuriya and Abayawardana, 2008) or this includes the BMS (Biodiversity Monitoring Survey of the Sinharaja and KDN BRs. The plant list from this study is still to be published and as such was available for this report. The summary is given in the Table above.

The Management Plan takes note of the project "A study to determine changes in the biodiversity values of Southern Sinharaja and Kanneliya Forests after the implementation of GEF Medium Sized Project (Jayasuriya and Abayawardana, 2008)" and states that this should be continued by FD staff and that forest monitoring facilities and technical skills should be enhanced in the FD. Information from ecosystem assessments from the 25 ha plot is made available to the FD. The management plan also takes into account the IUCN assessment in defining the conservation role of the Sinharaja NHWA.

4. THE CONSERVATION FUNCTION:

[This refers to programmes that seek to protect biodiversity at landscape and site levels and/or ecological functions that provide ecosystem goods and services in the biosphere reserve. While actions to address this function might be focused on core area(s) and buffer zone(s), ecosystem dynamics occur across a range of spatial and temporal scales throughout the biosphere reserve and beyond.]

4.1 Significant changes (if any) in the main habitat types, ecosystems, species or varieties of traditional or economic importance identified for the biosphere reserve, including natural processes or events, main human impacts, and/or relevant management practices (since the last report).

There have been significant positive changes in the abundance of threatened plant/animal species in the past 10 years (see Table 5): There are marked changes in species diversity of particular groups or indicative indigenous species during the past 10 years; formerly rare forest species such as the blue magpie are now abundant while formerly abundant species needing sunlight such as *Clidemia* are now rare/absent; climax forest structure is more common in the logged areas, while the

⁴² Source : Community focus group meetings

climax forest structure in primary forest has been stable and there has been an increase of climax species density in the logged areas; and invasive species have decreased in the forest depths, but an increased presence of *Alstonia macrophylla* has been reported by Jayasuriya and Abeywardena (2008) from a study to determine the changes in the biodiversity values of Southern Sinharaja. Overall much of the indicators show that forest quality has improved in the CZ since 2003, due to forest regeneration in the previously logged areas in the 1970s. More good forests have been added to the BZ and even here the abandoned tea lands are reverting back to good secondary high forest; but environmental quality appears to be decreasing in the TZ as rubber has been gradually replaced by tea which has no canopy cover. There have been likewise a reduction of dependence on natural forest products by peripheral communities (except for water), and people are moving away from over exploitation of forest resources. However, some threats from over visitation impact on the forest in the future remains - but would be mostly felt in the areas in and near nature trails.

Changes in relevant management practices

Due to the impact of the South West Rainforest Participatory Project, much greater importance is being given to community participation for forest conservation and management in areas of the SBR where this project was in operation. Further, the most contentious boundaries of the reserve bordering human settlements have been marked with concrete posts. Both boundary marking and the amicable relationships now forged between local people and forest managers have helped reduce encroachment and tree felling where ever the project was operational. Community engagement is at its inception at the northern border, but here too BR managers are adopting the approach that engaging with communities is crucial for forest conservation. However, there has been no opportunity for community engagement in the area between Kosmulla and Kudawa as yet.

Overall, extension work has been stepped up in the SBR, and people have been made more aware of forest offences and illegal activities. This combined with better relations with the FD staff (partly because the FD field officers have been moving away from their former policing role) appears to deter people from openly engaging in illegal activities that are damaging to the forest. In 2007, a survey by de Mel covering mostly areas where the GEF SW rainforest project was not in operation (and also in areas outside the SBR), showed that there were threats to the forest from local people, but most people were concerned that the forest should be conserved (de Mel, 2008). Even during this review, most respondents felt that encroachment and tree felling were controlled, except for a few exceptions, and that large scale commercial logging was totally controlled.

According to the National Heritage Wilderness Areas Act No. 3 of 1988 it is illegal to remove any item from the forest. As such a policing approach was adopted previously by the FD. After the South West Rainforest project, the management approach changed. Even though it remains illegal to extract any resource from the NHWA, Sinharaja Management Plan of 2009 recognizes that “complete enforcement of the law for NTFP collection seems unethical and even not socially responsible,” and warns that such attempts may result in conflicts between people and forest offices that might result in more harmful consequences. Based on this principle, FD field staff do not take action against the collection of NTFPs if it is not harmful to the forest or stop people from using traditionally used footpaths in the forest. Examples of activities that can happen are kitul tapping (provided the kitul sap is taken away to the village for making jaggery (candy) and treacle and no fires are lit in the forest for this); collection of mushrooms (which fetch around Rs 600/kg) and *beraliya* fruit which is highly seasonal - provided trees are not damaged; and the collection of medicinal plants for household use. This relaxing of law rigid law enforcement even when the forest extractions are small scale and non-destructive (e.g. for collection of medicinal plants, mushrooms, food items) has distinctly improved the commitment of people towards forest conservation. According to all field staff contacted, this has made their protection tasks much easier. However, people who have not gone through the process of social mobilisation may mistake this for lack of law enforcement. Even in areas where the S W Rainforest project was not in operation (e.g. Kudawa GN Division), out of 42 offences recorded between 2004 and 2012 in the SBR, 27 cases were related to wildlife offences and poaching (including possession of firearms without a license, and possession of meat of protected species, etc), while 7 were for felling a tree, 4 were for kitul tapping without a permit, 1 was for

removal of plants by a local person, and 2 were for cutting cane and poles from the forest. One case was of 2 foreign tourists removing orchids which was reported by the volunteer guide.⁴³

The Forest Department has also learnt lessons from the Sri Lanka - Australia Natural Resources Management Project (SLANRMP) which has taken the micro-enterprise development strategy forward, and the Management Plan of 2009 recognizes that this mechanism can be used to improve the living standards of local communities around the Sinharaja NHP through assistance with entrepreneurial development and finding marketing mechanisms for them.

4.2 Describe the main conservation programmes that have been conducted in the biosphere reserve over the past ten years as well as current on-going ones. Note their main goals and the scope of activities, e.g. biotic inventories, species-at-risk, landscape analyses, conservation stewardship actions. Cross reference to other sections below where appropriate.

The National Heritage Wilderness Areas Act No. 3 of 1988 provides the CZ of the SBR with the highest degree of protection in the island. Much of this area was also designated as a World Heritage Site in 1988. Thus conservation is afforded very high priority in the CZ and this is the main goal of forest management. However, as explained above there is a certain relaxation of rules as a management approach with regard to extraction of NTFPs which are not destructive and also with regard to the extraction of water from the reserve by local people using pipes. This is a conscious management strategy which is in the 2009 Management Plan. However, the law will not be changed as this could lead to very adverse over use, particularly by outsiders to the area.

The main programmes that have been carried out pursuant to the 2009 Management Plan are:

- Maintenance of the existing forest area - boundary marking through the ADB funded Forestry Resources Management Project (FRMP), using participatory boundary marking by linking with the South West Rainforest Participatory Project where this was functional. This has enabled excluding most areas with human habitations and including new encroachments in an agreed manner with local people in the most contentious areas (i.e. southern boundary). By marking the actual forest boundary the FD staff can patrol it better. Further, forests that are adjacent to the Sinharaja forest but are not part of the gazetted NHP are being acquired to enable greater connectivity for enhancement of biodiversity and habitat value of the CZ.
- Arresting degradation of biodiversity quality has been addressed by:
 - arresting illegal tree felling and further encroachments. However, this review found that, while no commercial scale tree felling is apparent, occasional felling of a tree for housing requirements does happen at the peripheries (also noted in 2008 by de Mel), but this is often *Alstonia macrophylla* - an invasive species now seen at the forest peripheries;
 - addressing adverse forest extractions (commercial scale extraction of dorana oil, medicinal plants, etc.), some extractions like collection of the seasonal *beraliya* fruit, medicinal plants for domestic use and arecanut fruit are ignored. At the Kudawa area, there is collection of deadwood for firewood and mushrooms, and kitul tapping with a permit (although tapping without a permit also occurs). However, poor land use adjacent to the reserve is still somewhat of a problem, especially at the Kudawa end.
- Monitoring biodiversity through a study to determine the changes in the biodiversity values of Southern Sinharaja and Kanneliya Forests after the implementation of GEF Medium Sized SW Rainforest Participatory Project. This has enabled the FD to be informed of changes since the National Conservation Review in the mid 1990s (Jayasuriya & Abayawardana, 2008).
- Engaging communities in conserving and managing the forest by enlisting the support of communities via the South West Rainforest Participatory Project by enhancing their existing livelihoods and opening scope for new alternate livelihoods and providing non-livelihood benefits. In other areas such as at Kudawa, extension services have been deployed to engage with local communities and create awareness for forest conservation.

⁴³ Forest Department Records (unpublished).

- Monoculture *Pinus* plantations have been enriched and under-planted with multiple use forest species that are in high demand such as endemic canopy dominant species; Multiple use species such as *Caryota urens* (kitul), *Coscinium fenestratum* (*weniwel*- a medicinal plant) and *Elettaria cardomomum* (a spice plant) and *Calamus* spp. (*Wewel*) or rattan. After 20 years in 2013, some sub-adult trees in the restoration trial, show columnar, branch free tree trunks, with spherical crowns that are now getting fully exposed to sunlight, indicating the light demanding nature of the adults of these canopy dominant *Shorea* species in the family Dipterocarpaceae.⁴⁴
- Sinharaja BR is a member of a global network of forest research plots, where long-term studies on the diversity and functioning of forests is being examined, under the sponsorship of the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI). Among the major objectives of this programme area to: i) increase scientific understanding of forest ecosystems, ii) guide sustainable forest management and natural-resource policy, iii) monitor the impacts of climate change and build capacity in forest science. Sri Lankan scientists are working on several scientific initiatives as a part of this network through this programme.

Apart from these a large number of research projects have been/are being carried out in the SBR since 2003 (previous review). These research projects are in Annex 4.

The ADB funded Forest Resources Management Project (FRMP) and the GEF/UNDP funded South West Rainforest Conservation Project of the Forest Department (2000-2007) both helped the conservation function of the forest by helping to stem the activities that were perceived as a threat to the biodiversity of the SBR - through boundary marking and engaging the local people for conservation action (see Box 3 in 2.4.7).

4.3 In what ways are conservation activities linked to, or integrated with, sustainable development issues (e.g. stewardship for conservation on private lands used for other purposes)?

The Sinharaja Community Participation Programme was initiated by the FD in 7 *Grama Niladhari* Divisions of the BZ and TZ under the GEF/UNDP funded Southwest Rainforest Conservation Participatory Project (explained in detail in sections 2.4.3, 5.6 and 5.9) is a good example of conservation activities linked with sustainable development (see Boxes 3 and 5). Many CBO members obtained soft loans and training via the project for enhancement of existing livelihoods (e.g. tea cultivation) and for alternative livelihood development. The enhanced income acted as incentives for the CBO members to move away from adverse practices such as encroachment for tea cultivation, felling trees, and over extraction of forest resources for income generation. It also promoted the members to engage in conservation action such as helping with forest boundary marking, planting trees, and informing adverse activities and illegal forest extractions and basically increasing vigilance for forest conservation.

4.4 How do you assess the effectiveness of actions or strategies applied?

(Describe the methods, indicators used).

Several focus group meetings were held throughout the review around Sinharaja SBR, using 2 sets of indicators. The first was in connection with the GEF portfolio review (Table 8 & 9, N=21). A second set of indicators was used at a final meeting with 40 persons (Tables 3 & 7). One set of questions was used for 5 different small focus group meetings for 45 persons at 5 different locations in the SBR. The responses of communities in Tables 3, 7 and 8 highlight the fact that there has been a notable behavioural change in the local communities during the past 10 years, and this has resulted in better ecosystem, habitat and species conservation in the CZ with the decrease of illegal adverse activities. This together with other 5 focus group discussions, informal individual discussions and 80 household surveys indicate that the overall conservation functions of the SBR have been well met.

⁴⁴ Source: Prof IAUN Gunatilleke. Also <http://www.ctfs.si.edu>

At the final focus group meeting with communities (N=40, Tables 3 & 7) all respondents agreed that that the participatory approach adopted by the FD had helped forest conservation, but, only 50% totally agreed that ecosystems species and habitats in the CZ are better conserved because of the project, while the balance 50% moderately agreed; and no one disagreed (Table 7). However, 80% totally agreed that the participatory project had helped forest conservation. The concerns by 50% of people may have been because there are threats such as people walking into the forest to collect leaves, insects, orchids. etc. In October 2012, two foreign tourists were apprehended removing orchids. Communities are more aware of these issues now and perceived all such actions as threats to the forest.

Discussions with FD staff and communities indicate that even though some offences do occur (illegal cutting of a tree for domestic use) they are the exceptions and none said that there was commercial scale logging or serious illicit tree felling from the Sinharaja forest; all said that many members of the community would inform the relevant authorities if they saw any tree felling. The forest officers and communities also reiterated that threats from encroachment and illegal tree felling have almost totally reduced, and tree felling when it happens often involves *Alstonia macrophylla* (an invasive species in forest peripheries) and a small tree termed *Vallepatte* (*Gyrinops valle*) which has assumed commercial value very recently. The latter extraction has been on the rise and probably added to the fact that 50% agreed only moderately that the ecosystem, habitats and species in the Sinharaja forest are better conserved due to the past participatory project. However, there was total disagreement that there were still threats to the forest from people (Table 3). All totally agreed that illicit felling and violations of forest laws are low or very low (Table 8). More importantly there was 100% agreement that local people are still willing to join with FD initiatives to manage the Sinharaja forest and also to engage in environmentally friendly development (Table 7).

The reduction of illegal actions appear also to be due to increased management effectiveness and better law enforcement, which is supported by the fair understanding that has been built between the local people and the forest managers as well as enhanced awareness provided by extension staff on illegal activities and their impacts on the environment and biodiversity.

The final focus group meetings (N=40) covering all TZ GN divisions (including people who were not members of the GEF project CBOs) showed 100% agreement that: there had been positive behavioural changes in communities during the past 10 years to aid forest conservation; that this was sustainable; ecosystem habitats and species were better conserved now.

Table 7: Indicators for assessment of successful conservation initiatives (N=40)

Indicators of conservation function	Percentage Response				
	Totally agree	Agree	Moderately agree	Disagree	Totally Disagree
a) The participatory management approach adopted by the FD since the GEF rainforest project has helped forest conservation.	17.5	62.5	20		
b) The ecosystem, habitats and species in the Sinharaja forest are better conserved due to the past participatory project.	50		50		
c) There were positive behavioural changes in the local communities towards conservation during the past 10 years	100				
d) Communities now understand that conserving the wildlife benefits them	100				
e) Local people are willing to participate in environmentally friendly development initiatives	100				
f) People are willing to participate in participatory management of the SBR in the future	100				
g) Local people would like help from the FD to grow trees in their home gardens	100				

The premise that effectiveness of the main conservation programmes with community participation in the biosphere reserve over the past ten years should have enhanced protection and enhanced community involvement in conservation were tested using the following indicators.⁴⁵

Table 8: Indicators to assess effectiveness of the South West Rainforest Participatory project for integrating conservation and development.
(N= 21)

Indicator	Percentage Response		
	Before 2006 (Before the rainforest Participatory project)	At project closure	Now (2013)
Active involvement of communities in wildlife conservation	Unsatisfactory (50) Very Unsatisfactory (50)	Satisfactory (50) Very satisfactory (50)	Satisfactory (50) Very satisfactory (50)
Violating forest conservation laws	High (50) Very High (50)	Very low (100)	Very low (100)
Illicit felling of trees	High (100)	Very Low (100)	Low (25) Very low (75)
Sustainable use of NTFPs	Unsatisfactory (100)	Satisfactory (50) Very satisfactory (50)	Satisfactory (50) Very satisfactory (50)

Source: Community consultations carried out in association with the GEF review

Table 8 shows that before the GEF project all respondents thought that active involvement of people in forest conservation had been very unsatisfactory/unsatisfactory; violating forest conservation laws was high or very high; illicit felling was high and sustainable use of NTFPs was unsatisfactory (meaning it was unsustainable). At project closure and in 2013, all thought that (a) active involvement of people in forest conservation and sustainable use of NTFPs was satisfactory/very satisfactory, and (b) that violating forest conservation laws was very low. Perception of illicit tree felling has changed from consensus at project closure that it was very low, to 25% thinking it that was low and only 75% % thinking it was very low.

Overall the results of focus group discussions and other more informal discussions with TZ communities show that the efforts taken by the FD to improve conservation have been largely successful; problems do occur but they are being attended to by the FD.

4.5 What are the main factors that influenced (positively or negatively) the successes of conservation efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective for conservation for sustainable development?

Discussions with FD staff and communities reveal that promoting sustainable development through livelihood enhancement among communities of the BZ and TZ played a vital role in promoting conservation of the Sinharaja forest. Notably, 80% of people consulted (N=40) totally agreed/agreed that the participatory management approach adopted by the FD since the GEF rainforest project has helped forest conservation, and none disagreed (Table 7).

⁴⁵ These indicators were developed by Centre for Poverty Analysis (CEPA) for the review of GEF funded community development programmes under the Conservation of the Unique Biodiversity in the Threatened Rain Forests of Southwest Sri Lanka (GEF ID 818) project of the Forest Department and the PAM&WC project of the DWLC (GEF ID. They were used for the BBR review with permission and the data were provided for the GEF review. The same indicators were used for all BRs during the periodic review.

The main reasons for biodiversity loss in the Sinharaja forest in the past was encroachment for tea cultivation, tree felling and unsustainable extraction of forest resources. These have been greatly reduced as a result of the community participation initiated by the GEF South West Rainforest participatory Project coupled with a turn around of the policing approach by FD field staff. This can be seen even in the Kudawa area where this project was not operational, as engaging communities has become an accepted management measure in general. The main impetus for success has been the livelihood development carried out by establishment of CBOs with revolving funds, and the soft loans and training to increase productivity to enhance tea yields from existing lands. Training and soft loans to develop alternate livelihood options have also contributed towards halting encroachment into the forest to enlarge tea small holdings and in some cases to reduce forest extractions for livelihood.

The better relations built with FD staff was also cited by people during discussions as an important factor. This has reached a highly satisfactory level at project closure in 2007 (Table 9), but was rated as moderate by 50% and satisfactory only by 50% in 2013. The moderate response came from the Matara district as the FD extension officer at the Pitadeniya camp had left at the time (March 2013), and there was no FD officer to attend the community meetings or organize the English and sewing classes for women and children that the FD had funded. Since then, a new officer had been allocated to this task when the PR team visited in August 2012, and during the team's next visit in November 2013 there was a considerable increase in attendance and enthusiasm of CBO members (N=56), underlining the need for continued engagement of communities by FD staff.

In addition to the indicators in Table 3, 7 and 8, the indicators in Table 9 were also used to assess effectiveness of conservation efforts by the FD management. According to perception of CBO members, there has been clear improvement of community awareness about forest conservation (Table 9), active involvement of the community in conservation efforts and lowering of violation of forest conservation laws (Table 8) since the GEF South West Rainforest Participatory Project.

Table 9: Factors that facilitated participatory conservation activities in the CZ²¹
(N= 21)

Indicator ⁴⁶	Percentage response at focus group meetings		
	Before 2006 (Before the rainforest Participatory project)	At project closure	Now (2013)
Relationship between local people and Forest officers	Unsatisfactory (75) Satisfactory (25)	Very satisfactory (100)	Moderate (50) Satisfactory (50)
Community awareness on importance of forest conservation	Moderate (50) Highly unsatisfactory (50)	Satisfactory (50) Highly satisfactory (50)	Satisfactory (50) Highly satisfactory (50)
Support for existing livelihoods	Very unsatisfactory (50) Moderate (50)	Satisfactory (100)	Satisfactory (100)
Non-livelihood benefits	Moderate (100)	Satisfactory (100)	Satisfactory (100)
Alternative livelihood opportunities	Very unsatisfactory (50) Unsatisfactory (50)	Satisfactory (50) Highly satisfactory (50)	Satisfactory (100)

Source: Community consultations carried out in association with the GEF Portfolio Review

Another aspect for long-term continuation of the community participation is that several FD extension officers who had worked on the South West Rainforest Participatory Project were absorbed into the department and some continued to work in the area, providing a channel for information to flow in about illegal activities in the reserve. This has helped better law enforcement. Also due to the goodwill built between the local people and the FD staff, people who

⁴⁶These indicators were developed by Centre for Poverty Analysis (CEPA) for the review of GEF funded community development programmes under the Conservation of the Unique Biodiversity in the Threatened Rain Forests of Southwest Sri Lanka (GEF ID 818) project of the Forest Department and the PAM&WC project of the DWLC. They were used for the SBR review with permission and the data from the MAB review were shared with the GEF portfolio review.

usually engaged in illegal activities such as encroachment or poaching in the reserve, were reluctant to do so, partly because they knew that the FD would be informed by someone in the village, and they also felt bad to be confronted regarding an illegal act by a known FD officer. This had also led to better law enforcement whereby large scale unsustainable forest extractions have been halted.

Thus, economic development, through existing livelihood development and introduction to alternative livelihoods, peer pressure, and better relations with FD officials (and hence better law enforcement) seem to have been the most important factors for reducing/halting encroachment and large scale illicit tree felling operations either singly or with outsiders. Intense awareness programmes about the importance of the forest for maintaining climatic conditions and water for agriculture and human wellbeing and permanent boundary marking of the forest with due agreement among local people have all contributed to the success of conservation efforts.

4.6 Other comments/observations from a biosphere reserve perspective.

According to the National Wilderness Heritage Areas Act No. 3 of 1988, the Sinharaja forest has been awarded the highest conservation status of any forest in the country.⁴⁷ However, flexibility has been built into management in matters of NTFP extraction, on a case by case basis, so as not to prohibit all extractions when they are clearly not destructive, based on the premise that stopping all such activities will not contribute to the conservation of the forest in the long-term (Sinharaja Management Plan of 2009). However, the law remains the same to prevent the abuse of the system and to control destructive extraction by outsiders. The South West Rainforest Participatory Project has been able to use this approach with great advantage where the communities themselves now agree that unsustainable extractions are harmful to the forest. By assisting with livelihood development, they are enabled to desist from such activities while enhancing their economic base. The participatory model pilot tested was later used in the community component of the PAM&WC project at the Bundala Biosphere Reserve (BBR) and in the TZ of the Hurulu Biosphere Reserve (HBR). In all instances the model proved successful in mobilizing community participation for conservation which is of considerable significance from a biosphere reserve perspective.

However, the difficulty of sustaining community interest in the CBOs after project closure, when benefits were provided to individual households has been noted, and the FD has taken forward the Sinharaja model in the Sri Lanka-Ausaid project which seeks to raise community awareness about the economic options available to them and to assist them to engage in (primarily) commercial relationships with appropriate service providers. In the process the FD plays a key role as an information provider and catalyst for these market based linkages. This has been recommended in the 2009 Management Plan for the SBR, and it was explored by the National MAB Committee at the private sector meeting held during this review. A good response was obtained from the private sector, and there was a request for a larger private sector participation at a follow-up workshop in 2014.

5. THE DEVELOPMENT FUNCTION:

[This refers to programmes that address sustainability issues at the individual livelihood and community levels, including economic trends in different sectors that drive the need to innovate and/or adapt, the main adaptive strategies being implemented within the biosphere reserve, and initiatives to develop certain sectors such as

⁴⁷ According to the National Heritage Wilderness Areas Act No. 3 of 1988, no person shall in a National Heritage Wilderness Area: (a) cut, mark, lop, girdle, saw, covert, collect or remove any plant tree or any part thereof or any other forest produce; (b) willfully strip off any bark or leaves from, or otherwise damage or interfere with, any tree; (c) cut grass or pasture cattle; (d) pollute water; (e) remove, uproot or destroy, or cause any damage or injury to, any plant; (f) sell, expose or offer sale, any plant; (g) shoot, trap or snare, molest or disturb, any bird or animal; (h) sell, expose or offer for sale, any bird, beast or reptile or any part of any such bird, beast or reptile; (i) take or destroy any egg of any bird or reptile or nest of any bird; (j) fire any gun or do any other act which disturbs or is likely to disturb, any wild animal or do any act which interfere, or is likely to interfere with, the breeding place of any such animal; (k) possess or use any trap or any explosive or poisonous substance capable of being used for the purpose of injuring or destroying any animal or plant; (l) erect any building, whether permanent or temporary, or occupy any building so erected; (m) make any fresh clearing; (n) kindle or keep, or carry any fire; (o) remove any forest produce in any form; (p) clear, or break up any land for cultivation or any other purpose; (q) construct any road; (r) or damage, alter or remove any wall, ditch, embankment, fence, hedge, railing or other boundary mark.

tourism to complement and/or compensate for losses in other markets, employment, and community well-being over the past ten years]

5.1 Briefly describe the prevailing trends over the past decade in each main sector of the economic base of the biosphere reserve (e.g. agriculture and forest activities, renewable resources, non-renewable resources, manufacturing and construction, tourism and other service industries).

This SBR has remained relatively constant and tea is the main economic activity as found in the 2003 Periodic Review (Dela, 2003). The same had been observed in a 2007 survey (de Mel, 2008).⁴⁸ The 2007 survey showed that the main occupation of 78% of heads of households was farming, and average land holdings per household was 1.5 acres, while the average cropland size was 1.3 acres. Crops covered 84% of the settlements and 91% of crop land comprised tea lands. On average each household produced about 294g of tea/month, generating a total of Rs 14,772/- per household/month. About 20% of respondents were *Samurdhi* recipients (poor people) receiving state aid (range within the GN divisions being 0% -67%). Most people were not, however, very poor, as on average 78% households had permanent housing with 1 living room, 3 bedrooms and a kitchen. About 98% of houses had toilets. Further, about 92% lived in their own lands, but only 70% were entitled to their lands (with deeds, permits or government entitlements). Of those who were on their own land, 60% stated that they inherited the land, while 16% purchased their land, 15% had originally cleared forest to obtain land, while some were allocated (5%) or given land (1%).

During the 2013 survey in connection to this review there were indications that the local economy has improved with better income from tea cultivation and there was 100% agreement that the economic status of local communities had changed for the better during the past 10 years (N=45 at 5 focus group meetings in the SBR. This is reflected in the fact that the household survey concurrent to the Periodic Review in 2013 (N=80)⁴⁹ revealed that permanent housing had increased to 96.3% of respondents. The average crop land area per household was 1.7 acres. Further, 95% of households had bank accounts (i.e. at least one member of the household had a bank account), and 3.8% had access to banking facilities in their village. Of the 96.3% who did not have banking facilities, all would like banking facilities in their village.

Despite the problems of obtaining electricity, 61% of householders (N=80) got only news from the TV, 5% got news only from the radio, while 31.3% got news from both; only 2.5% got news from neighbours. About 30% owned a refrigerator; among those who did not (70%), 73% were constrained due to lack of money, 21.4% had no adequate form of electricity, and 2% had no desire to own one. Of all households, 35% were *Samurdhi* recipients;⁵⁰ and only 13.8% of adults in the respondent households were employed outside the village.

- Use of forest and resources

In 2007 de Mel (2008) found that the about 57% of surveyed households collected products from the forest, the highest being in the Ratnapura district; 20% of respondent households and 19% of other households collected firewood; 5% of respondent households collected housing materials and timber; 4% of other households hunted animals; 11% of respondent households and 20% of other households collected medicinal plants; 25% of respondent households and 70% of other households collected wild foods; 2% of households collected items for handicrafts; 5% of respondent households and 30% of

⁴⁸ Survey carried out by the winner of the young scientists award in 2007 for the project Interactions and Socio-Economic Linkages between Local Communities and Protected Areas: A Case Study of the Sinharaja MAB Reserve in Sri Lanka

⁴⁹ Details of the household interviews (N=80): 82.5% of the respondents were heads of households (of which 12.12% were females), 13.7% were the householder's wife, 1.25% were daughters and 2.5% were sons of householder respectively. By gender, 75% were males, 25% were females. By age group, 20% of respondents were in the 20- <35 year age group, 65% were in the ≥ 35 - <60 age group; 15% were in the ≥ 60 year age group. 100% respondents were Sinhalese. In terms of religion, 100% were Buddhists.

other households tapped kitul, 4% of respondent households collected rattan while 24% of other households collected dorana oil (which involves a destructive process resulting in the death of the tree after some time); 1% of other households also carried out illegal gem mining in the forest.

- **Changes in forest use**

During the 2007 survey de Mel (2008) found that many people collected forest products, but of the 84% of the households who replied about the trend in use over time, 90% stated that forest use had declined - either they had no time to go to the forest, because of tea and other income, or because they had no need to go into the forest, because of laws, rangers and because the forest was protected; because they will lose services (including water) from the forest or because they were educated (4%), or were scared to go in because of wildlife (3%), and because they were involved in conservation projects (1%).

However, during the 2103 household survey (N=80), only 15% of households got some income from forest products, and none depended on this as their main income. Further, 33.8% did not do so because they were not interested, had no time and it was not worth the time spent, 57% also said it was illegal and 7.5% said they did not do so because of the impact from FD officers. Notably the segment that did not collect forest items is higher than in the 2007 survey which sampled mainly GN divisions that had not participated in the GEF South West Rainforest Project. Compensation for illegal use of forest lands for tea and commercial scale forest extractions - which has helped wean people away from these adverse practices - are described in detail in section 2.4.3, 5.6 and 5.9.

The focus group discussions (in 2013) for this review (N=45) showed that several forest extractions were continuing on a small scale, mainly for domestic use. E.g. hunting (mostly as crop pests in agricultural holdings⁵¹), obtaining timber, poles, medicinal plants (including *weniwel* (*Cossinium*), bee honey, reeds (*pan*), rattan, wild cardamom, gum, bamboo, sticks, *dorana* oil and *beraliya* fruit (a food item). Of these, only hunting and collection of sticks were solely for domestic use. Kitul tapping and collection of food items (except for *beraliya*), firewood, arecanut and *vallepatte* ranged from small to middle scale, and all except food items and firewood involved sale, but were mainly for domestic use. *Dorana* oil, *vallepatte* and arecanut were collected only for sale. However, all forest collections had decreased during the past 10 years, except collection of arecanut which was increasing and was totally for sale. The removal of items by outsiders was recorded by 20% of respondents who said that *vallepatte* was being removed on a small scale by outsiders.⁵²

According to FD staff at KCC and the community, the dominant forest use in the Ratnapura district (northern boundary) region of the SBR is kitul tapping. Permits are provided for this activity and the new generation still engages in it. In the southern section of the SBR, kitul tapping has decreased because the younger generation does not want to take to this activity, mainly due to the need to move towards jobs in the private and state sector. Thus, overall forest use of any kind is decreasing partly because it is not considered worthwhile due to other avenues for income, and partly due to better knowledge of the law and greater awareness about the importance of the Sinharaja forest for maintenance of their water supply and agriculture. While a few people do still get an income from it, this is small scale and as a supplementary source of income. Some uses that are not destructive continue as FD staff do not strictly enforce the law due to internal management approaches that are being adopted (although communities stated that all uses were prohibited in Table 3).

- **Availability of renewable and other resources**

The 2007 survey (de Mel, 2008) showed that only 67% of houses had mains electricity and 47% had energy from renewable sources such as from mini-hydroelectricity. Further 74% of people obtained their water from the forest piped directly from streams, while 13% used wells.

⁵¹ 17.4% householders in the household survey said that other households engaged in hunting, of this 91.4% said it was for crop protection.

⁵² Note: All threats that were reported during individual interviews and focus group discussions were verified by cross-checking with other community groups and the FD without divulging the source. This served to eliminate some adverse practices that were reported due to personal vendettas and interests.

During the 2013 household survey, about 70% of houses had electricity from the main grid; but 30% had electricity from small mini-hydropower plants, and only 1.3% had no electricity. The increase in access to electricity was probably due to several mini-hydropower stations (>5) that have come up in the SBR. Almost all provide <5 KW, except on at Kolontotuwa which provides about 10 KW. The PCC uses mini-hydropower for the visitor centre and Martin's lodge guest house also uses mini-hydro power. Mini-hydropower users in the villages are formed into village electricity societies and have their own rules that limit use during certain times of the day and the hours that certain appliances such as irons and refrigerators can be used.

Most people (88.8%) continued to depend on the forest for their water supply, either piped to the house (85%) or directly collected from streams; 10% received water from outside the forest - from wells and piped water or river/streams; while (1.3%) got their water from forest as well as outside. Overall, at least 94% had access to potable water.

- **Education and health services**

BOX 4: Services in the SBR in 2003 during the previous periodic review

In 2003, tea cultivation brought a good income for the villagers in the Sinharaja buffer zone, and lifestyles and housing conditions had improved tremendously during the past decade. However, it was seen that educational and medical facilities and transport infrastructure had lagged behind. The villagers consulted during the 2003 review were unanimously dissatisfied with the available educational facilities in the primary schools and many of the secondary schools. However, 90% of students in the buffer zone areas were schooling, and most continued schooling to levels between grade eight and eleven (Ordinary Levels). Similarly these villagers had poor access to western medical facilities, and hospitals with required facilities were few and far between. Access to hospitals for the sick was extremely difficult due to disrepair of bridges due to flood damage. Due to the paucity of motorable roads and an undulating terrain, access to and from these villages were difficult at the best of times, and the main mode of transport was the motor cycle.

Source: 2003 Periodic Report for the Sinharaja Biosphere Reserve (Dela, 2003)

During this review it could be seen that educational facilities and medical facilities had significantly improved in the SBR since 2003, mainly due to improvement of access roads and the consequent private transport available for school children in small vans.

The SBR contained about 7 schools which had classes up to the GCE "O" Levels, which provided a fair education. Some were in the Tamil medium for children of workers in the tea estates who were mainly Tamil. However, access to university entrance classes necessitated travel to outside the SBR: 32.5% of household respondents (N=80) said that they were within <1 km of a school; 45.5% were within 1- <5 km of a school; 3.8% had >5 km to reach a good school. Also 87.5% of students from respondent families went to school on foot, 10.3% used the bus, 2.5% went on a motor bike (with a parent) or used other forms of transport. Education in state schools is free of charge.

All people in the SBR had access to hospital facilities, but only 12.5% were within 1-3 km of a hospital, 22.5% were within 3-6 km, and 27.5% had to travel >9 km. About 3.3% of respondent families went to hospital on foot, 77.5% used the bus and 18.6% used other means of transport. There was free health care from good state hospitals outside the SBR at the northern end, and two hospitals off the southern boundary. In addition the KCC organized health camps for the local communities as a part of their extension activities. Lankagama within the TZ also had a good maternal clinic with a Medical Officer of Health (MOH) in attendance. Each GN division in the SBR had a family health care officer (female) residing in the village to help pregnant women and advise them on nutrition, child birth and child care. Consulting specialists can only be had at hospitals outside the SBR which are reachable using public bus transport. Despite the distances to hospitals, people preferred western medication: 20% used only western medication, while the other 80% used both western and ayurvedic (traditional) medication. All said that this was due to their own preference. Tradition medication was used mainly for fractures, etc.

- **Roads and transportation:**

While the road infrastructure in the TZ has improved since 2003, some problems remain. Access to the CZ (NHWA) is mainly through the Kalawana -Weddagala roads (in poor condition), and other roads from Deniyaya and Neluwa.

There are three designated entry points to the CZ at Dorana ella-Kudawa (about 1 km away from the KCC and the ticket counter; and two others from Pitadeniya and Morningside. There is a 3 km walk from Medieripitiya to the ticket counter at Pitadeniya on the Sinharaja southern boarder for those who come in big vehicles, which includes school groups, and from this point there is a 2 km walk to the Pitadeniya Information Centre at the PCC, where they are provided with education programmes for a good knowledge of the forest. The route to the Morningside bungalow is in total disrepair and access is through private lands (plantation) at the moment, and this needs a 4 wheel drive.

While most people consulted felt that road and transportation had increased in the SBR, road access is still considered a problem. In some areas, improvement of transportation infrastructure even in the TZ has been impeded by concerns among the general public and conservationists that it may affect the biodiversity of the CZ which is also a World Heritage Site. While their concerns are valid due to the nature of the reserve, the FD staff are aware of grassroots community needs, and feel that depriving the community of basic transportation facilities is counterproductive to conservation of the Sinharaja NHTWA. However, they too concur that any such measures should not cause damage to the integrity of the Sinharaja NHTWA/World Heritage Site.

5.2 Describe the tourism industry in the biosphere reserve. Has tourism increased or decreased since nomination or the last periodic review? What new projects or initiatives have been undertaken? What types of tourism activities? What effect have these activities had on the economy, ecology and society of the biosphere reserve? Are there any studies that examine whether designation of the area as a biosphere reserve has influenced the number of tourists? Please provide the bibliographic information of any studies and/or a paper copy in an annex.

- Trends in tourism

In 2003, tourism was not viewed as a main economic activity (Dela, 2003), but it has increased over the years. This is probably because of the increase of tourist accommodation. During the focus group discussions (N=45) 40% said that tourism was an important income earner for people in the TZ, and there was general agreement that tourism has increased over the years in the Sinharaja National Heritage Wilderness Area (which probably meant influx of foreign tourists). The facilities at the KCC and PCC have been greatly enhanced since 2003 for tourist accommodation. While most visitors to Sinharaja are day visitors, a considerable segment also stay overnight in the several ecolodges and guest houses present in the SBR. Most hotels are small, but the Rainforest Ecolodge with 16 chalets offers accommodation for top-end tourists and is the largest tourist accommodation in the SBR. There are two smaller ecolodges (12 and 6 rooms) that cater mainly to foreign tourists, a smaller basic but popular ecolodge which also caters to foreign and local tourists, and about 5 guest houses in TZ, some of which are still being constructed. More small guest houses/rooms are being built and providing home stay facilities is becoming popular in the TZ.

The Forest Department has tourist accommodation at the KCC, PCC and the Morningside bungalow, which have catered mainly to local tourists so far, but new accommodation has been built with foreign tourists in mind. Overall, the KCC⁵³ has 2 dormitories accommodating 30 persons, three cabins accommodating 22 persons, a bungalow (*Murakela*) accommodating 14 persons, and a circuit bungalow (*Govisevana*) for 10 persons. The latter is intended to cater to foreign guests as well. Guests can bring their food or bring dry rations and get the KCC cooks to prepare their meals. School groups are often accommodated at this site. The PCC has two dormitories accommodating 46 and a house accommodating 5 persons in scenic and peaceful surroundings. Its disadvantage is the lack of proper motorable access. An alternate road to the centre is being explored by the FD. An alternative access to Morningside is also being looked at from the northern boundary with the idea of providing opportunities for guides from the GN Division of Illumbakanda which is at present not in the TZ of the SBR and the communities have not yet been mobilised here.

⁵³ In 2003, the KCC had two dormitories, two cabins and a separate guest house (with a cook) at a very nominal rate. The PCC had one lodge and a dormitory. The Morningside bungalow was run down.

The Morningside accommodation facilities have been renovated since 2013, but despite good potential it is still unappealing. It is, however, compensated by a splendid view of the sub-montane forest ecosystem. Due to the difficulty of road access relatively few visitors use this accommodation.

Tourism is also developing around 2 waterfalls in the Galle District. One (*Duwili ella*) has facilities for resting and there is a manmade pool for bathing (which is not allowed in the waterfall). It is managed by the Local Authority at Kosmulla (*Kosmulla Pradeshiya Saba*). A second waterfall (*Brahmana ella*) in the Lankagama GN division is being managed by the FD with their field staff.

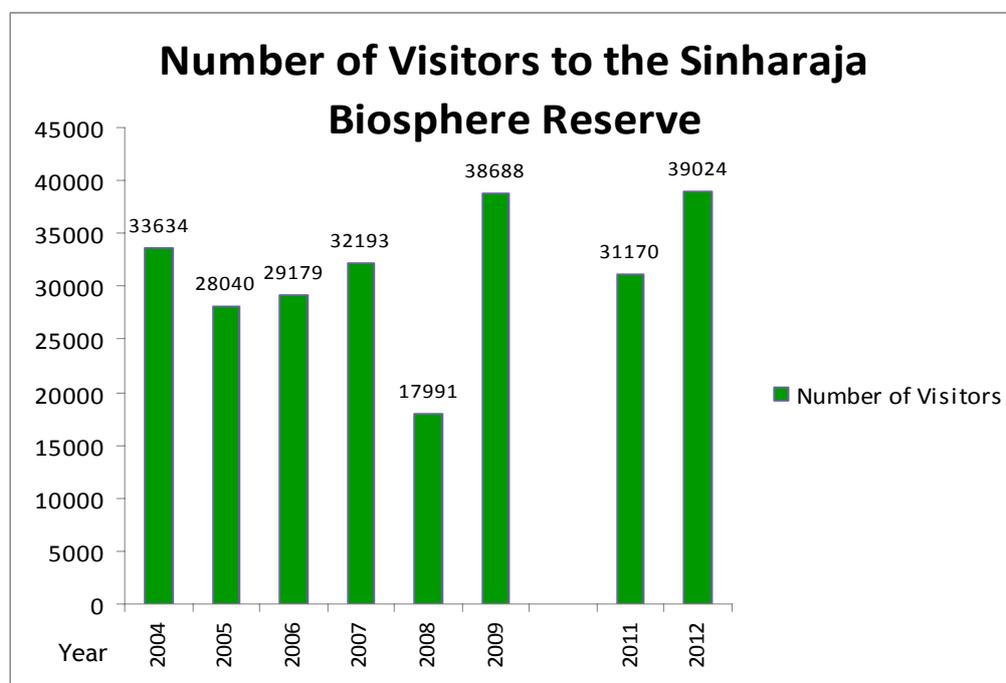


Fig. 1: Visitor numbers and revenue at the Sinharaja Biosphere Reserve CZ: 2003-2012

Source: Forest Department Annual reports for 2004-2012. *The data for 2010 were not comparable and hence not used*

Visitors are not allowed to enter the forest alone from Kudawa or Pitadeniya. Only three pioneer local guides who were taking in tourist at Pitadeniya before the FD set up operations there are permitted to take tourist into the forest which they do as a package, inclusive of accommodation. The FD has 27 well trained local volunteer guides operating from the KCC and 19 operating from the PCC (including servicing the trail to the *Brahmana ella* waterfall). The latter can benefit with more training.⁵⁴ The need to further upgrade tourism facilities at the Sinharaja NHP and improvement of visual appeal of the conservation centres and Morningside is stated in the 2009 Sinharaja Management Plan.

Discussions with owners and managers of tourist hotels/guest houses (N=8)⁵⁵ indicate that tourism had increased during the past few years and that the demand for overnight accommodation is rising.

According to the focus group discussions (N=45) tourism has increased during the past 10 years with increased tourist arrivals (mainly foreign tourists) attributed to better transport infrastructure and increased tourist accommodation.

5.3 When applicable, describe other key sectors and uses such as agriculture, fishing, forestry. Have they increased or decreased since the nomination or the last periodic review? What kind

⁵⁴ The Need for Pitadeniya guides to be trained at Kudawa has been taken into account at the BR Managers workshop and is planned for 2014.

⁵⁵ The Review Team visited Rainforest Ecolodge, the Sinharaja cottage, Seyana Ecolodge, The Blue Magpie Lodge, Bird Paradise View, PS's guest house, Martin's Lodge and one being built, Hotel Rock View could not be accessed.

of new projects or initiatives have been undertaken? What effect have they had on the economy and ecology of the biosphere reserve, and on its biodiversity? Are there any studies that examine whether designation as a biosphere reserve has influenced the frequency of its activities? If so, provide the bibliographic information of these studies and/or a paper copy in an annex.

- **Agriculture**

As at the 2003 review (Dela, 2003), and the 2007 survey (de Mel, 2008), the TZ of the SBR is mainly agricultural (in 2013). The household survey (N=80) showed that 95% of households were involved in some form of agriculture, all were involved in growing tea even on a small scale, 4.8% also grew some fruit or vegetables. Only about 28% of respondents received less than 40% of their income from agriculture, while, 30.3% received 40-80% of their income from agriculture, and 39.5% received 80-100% of their income from agriculture. Of the households engaged in agriculture, 91.3% were engaged in tea cultivation and all were doing it for commercial purposes. Among those growing tea, 61.6% grew tea in their own home gardens, while 5.5% used other lands and 32.9% grew tea in both categories of land. About 10% of tea holdings were <40 perches, 13.7% of lands were ≥40 -<80; while 76.1% of small tea holdings were ≤80 perches. The average plot size of tea lands was 1.2 acres.

The 2013 household survey (N=80%) showed that the main source of income for 58.6% of respondents was from their tea holdings, while 21.6% were labourers mostly in tea lands; 2.% were drivers also involved with the tea industry. None depended on extraction of forest resources for their main income, but 15% reported some income from forest products: namely 5% had income from sale of mushrooms, 8.8% from sale of kitul products, 1.3% firewood and 3.8% from sale of medicinal plants. However, the reliance on forest use was declining.

During the focus group discussions (N=45) all respondents accepted that tea was a main economic activity in the TZ, 60% said that paddy was less important but an important income earner, 40% said tourism was an income earner, and 20% said mini-hydropower plants were an economic activity in the TZ but much of this income was gained by companies outside the SBR.

Assistance for economic development in the TZ villages has also been provided by state sponsored programmes such as *Samurdhi and Divineguma*, and by the South West Rainforest Participatory Project carried out by the FD.

5.4 How do economic activities in the biosphere benefit local communities?

This is explained in 5.1 and 5.2. The focus group discussions (N=45) showed that the main activities in the BZ were tourism (identified by 40%) and kitul tapping (identified by all). Tourism had increased, but kitul tapping was declining due to lack of tappers. The main economic activities in the TZ were identified as small scale tea plantations (by 100%), paddy cultivation (by 60%), tourism (by 40%) and mini hydropower projects (by 20%). However the economic benefits from the latter was received by outsiders to the SBR. Extraction of forest resources from the CZ was no longer a main economic activity for people in the SBR, although 15% (household survey) reported some income from forest products (sale of mushrooms, kitul products, firewood and medicinal plants as in 5.1 above). This too was declining.

Research work in the SBR has also benefitted local people at the Kudawa end as they were hired as workers, some of whom were hired on a long-term basis. This has helped their socio-economic status.⁵⁶

Tourism in the SBR has benefitted many small scale guest house owners. The KCC and PCC have 27 and 19 volunteer visitor guides respectively who accompany visitors on foot from the Kudawa and Pitadeniya entrances along the designated nature trails and the trail for the Brahmana *ella* waterfall. In addition there are 3 the three local pioneer guides who are the only persons permitted to enter the forest alone apart from the FD staff. They are permitted to take in visitors (as a special

⁵⁶ Discussion with Prof CVC Gunatilleke, long-term researcher in the SBR

concession) which is done on a package basis inclusive of accommodation. The jeep drivers at KCC are beneficiaries of tourism in the CZ. However, while benefits from ecotourism were considered satisfactory by respondents in the Matara district, this was not applicable to the Galle district as there was no FD entrance to the CZ. The *Duvili ella* trail is entirely managed by the local authority with one guard and does not benefit local people as such, but these funds are supposed to benefit local development. A trail from the north to Morningside is being considered by the KCC on the eastern boundary to benefit local people at the northern boundary. Likewise, tourism development at eastern Sinharaja can be enhanced by a FD manned barrier at this end from the south. On the other hand maintaining a permanent 24 hour entry point is costly for the FD, and means of collaborating with the private sector for this would be explored at the private sector workshop in 2014.

In addition, economic and infrastructure development of local people and villages have benefitted from several state run activities for socio-economic upliftment in the Ratnapura, Galle and Matara districts. These include the *Divineguma* and *Samurdhi* programmes. The NGO *Sevalanka* has also had a long-term programme for enhancing livelihoods and social upliftment of people in the area.

5.5 How do you assess the effectiveness of actions or strategies applied?

(Describe the methods, indicators).

There is good progress through action to promote sustainable livelihoods and economic development that complements conservation of biodiversity in the CZ of the SBR by the community participation in conservation initiative set up through the South West Rainforest project. This supported sustainable economic development by helping people move away from destructive activities that hindered biodiversity conservation in the CZ by providing assistance with existing livelihood enhancement, and access to alternate livelihoods through training and soft loans. The situation prior to the project, at project closure in 2007, and in 2013 were assessed through focus group discussions carried out by the GEF review in which the periodic review consultant participated.

The indicators used⁵⁷ probed: (1) Assistance to local people to enhance livelihoods existing prior to the project, (2) Benefits to communities other than livelihood development (3) opportunities for alternative livelihoods to move away from livelihoods that are considered a threat to biodiversity conservation in the CZ, (4) improvement of ecotourism/nature based tourism in the area, and (5) Markets for local products. The responses to indicators 1-3 are in Table 10.

The results indicate that the strategies used to support livelihoods that existed before the participatory project (mainly to increase yields from tea cultivation to reduce need for encroachment to expand tea holdings), provide non-livelihood social and other benefits, provide alternate livelihood opportunities to reduce dependency on unsustainable forest use, and benefits from ecotourism are satisfactory. The latter was applicable only to the CBOs in the Matara district as there were no opportunities for tourism in the Galle district where there was no FD entry point. Since this consultation, the *Brahmana ella* waterfall entrance has been opened at Lankagama, but this is more towards the PCC entrance. There has been no progress for local markets from local products, which has remained moderate (50%) and satisfactory (50%) from before the project.

However, what is important is that the relationship between local people and forest officers, community awareness on importance of forest conservation, active involvement of communities in wildlife conservation and a more sustainable use of NTFPs have increased, while violating forest

⁵⁷ These indicators were developed by Centre for Poverty Analysis (CEPA) for the review of GEF funded community development programmes under the Conservation of the Unique Biodiversity in the Threatened Rain Forests of Southwest Sri Lanka (GEF ID 818) project of the Forest Department and the PAM&WC project of the DWLC. They were used for the BBR review with permission and the data were shared with the GEF review.

Table 10: indicators of promoting sustainable development and economic advancement (N= 21)

Indicator	Percentage response at focus group meetings		
	Before 2006 (Before the rainforest Participatory project)	At project closure	Now (2013)
Support for existing livelihoods.	Moderate (50) Very unsatisfactory (50)	Satisfactory (100)	Satisfactory (100)
Non-livelihood benefits	Moderate (100)	Satisfactory (100)	Satisfactory (100)
Alternative livelihood opportunities	Unsatisfactory (50) Very unsatisfactory (50)	Very satisfactory (50) Satisfactory (50)	Satisfactory (100)
Benefits from ecotourism	N/A (50) Moderate (50)	N/A (50) Satisfactory (50)	N/A (50)* Satisfactory (50)
Local market for local products	Moderate (50) Satisfactory (50)	Moderate (50) Satisfactory (50)	Moderate (50) Satisfactory (50)

The response was from CBOs in Neluwa where there is no FD centre and as such no scope for tourism in the SBR.

Note: Some of these indicators are repeated from Table 9

There was consensus among members of CBOs established by the South West Rainforest Participatory Project that local people are willing to participate in environmentally friendly development initiatives and all agreed that participatory forest management benefits local people (Table 7). Focus group discussions with CBO members as well as non-members stated that this project had provided good livelihood benefits. All agreed that there had only been positive behavioural changes in the community from the project and that it had resulted in conserving species and restoring ecosystems. They all agreed that the conservation oriented behaviour patterns brought about by the project was sustainable, there had been economic improvement of the community and social benefits through the project. The drop in CBO membership was due to inadequate external monitoring (the FD has consciously moved away from this role), inefficiency of present CBO office bearers (the trained office bearers have moved out having got good jobs elsewhere); and lack of funds and further benefits coming to the CBOs after project closure. To address this it was recommended to establish an external monitoring programme, create continual awareness about forest conservation (for the young people now becoming adults) and to improve financial support and livelihood training opportunities for the CBOs (including tea cultivation). Establishing plant nurseries and compost producing plants were identified as potential sustainable development group activities that could be introduced to the CBOs by the FD.

5.6 Community economic development initiatives. What programmes exist to promote comprehensive strategies for economic innovation, change, and adaptation within the biosphere reserve, and to what extent are they implemented?

- The GEF/UNDP funded Southwest Rainforest Conservation Participatory Project of the Forest Department (2000-2007)

This project pilot tested the development of a viable participatory management model for forests in Sri Lanka, giving due consideration to the conservation status of the relevant forests, the level and type of forest dependency among local people, and the national forest policy of 1995. As such, the model developed was one in which the overall control of forest resources remains vested in the Forest Department, while the communities had a recognizable role in conserving the forest reserves so that they remained committed stakeholders in the process. The CBOs assisted the Forest Department to work out appropriate systems for delivery of assistance (for each village) as deemed required for social upliftment and to reduce forest dependency (including encroachment) by improving local livelihoods. The CBOs were helped to become self-reliant in the long-term after the project ended through establishment of Community Trust Funds (CTFs) for which seed money were initially provided via the Forest Department. The CBOs were registered so that they can operate the CTFs and a bank account. The CTFs provided soft loans at very low interest rates for CBO members to engage in activities that would enhance cash incomes and reduce forest dependency - mainly to alleviate the need to expand tea small holdings into the reserves and to wean away local people from some damaging forest extractions - often for commercial purposes. The CBO members were

trained through the project to write proposals for seeking funds, and office bearers were trained to keep accounts and carry out the CBO activities.

The CBO members were also assisted in developing technical and entrepreneurial skills by the Forest Department to enhance their cash incomes through several training programmes (see 5.8), thereby reducing the need to encroach into the reserve to expand tea holdings or engage in destructive forest uses. The required training programmes and the members to receive training were selected by the CBOs. As a result of this project, communities become more aware of the value of the forests due to effective social mobilization, and a dialogue developed between the community and the Forest Department. This has generated greater local commitment towards conservation of the reserves. The project also provides tangible benefits for CBO members, thereby promoting continued support for forest conservation. The Forest Department which initially facilitated the formation of these voluntary CBOs has now moved into an advisory and monitoring role; the CBOs are run entirely by community members.

The household survey showed that 51.3% of respondent households were CBO members. Of those who weren't, 15.5% had been members earlier. Among the present members, 92.7% said they had benefitted from the project (in 2003 only 84% said they had benefitted from the project). Those who had stopped being members said it was due to lack of time to attend meetings, or because they were now living away from the village. More details about this programme are provided in sections 2.4.3, 2.47, 4.3, 4.5 and 5.5, 5.7 and 5.9.

- Other initiatives

- (i) Samurdhi programme⁵⁸

The *Samurdhi* programme is an islandwide Social Security Programme conducted by the Department of the Commissioner General of *Samurdhi* and the Sri Lanka *Samurdhi* Authority which conducts empowerment programmes such as rural development, social development, and banking and income generating activities for economically deprived people. It is operational in the all districts of the country via the District Secretariats.

Around 35% of households from the household survey were *Samurdhi* recipients although only 21% were *Samurdhi* beneficiaries in all the GN divisions in the TZ and BZ. Others with higher income levels or had children who were in permanent jobs did not qualify for *Samurdhi* benefits.

This programme operates under three main approaches to alleviate poverty and develop rural areas: the Safety Nets Programme for low income households that are given subsidies and an insurance scheme in the event of child birth, marriage, hospitalization and death; Rural Development Programme - for infrastructure development and a social development programmes that focus on the aged destitute, alcoholics, drug addicts, handicapped and other disadvantaged persons. This includes projects such as environmental protection, youth training, nutrition, etc.; The Income generating and Banking Programme which provides micro financing facilities for setting up incomes generating livelihood development activities and trains poor families to use banking facilities.

Community economic development is targeted under:

(a) The *Samurdhi* Subsidy (relief) Programme: Under this, a coupon provided to the beneficiary from low income households (i.e. with an income <Rs 3000/- per month) which is valid for six months and consists of cash value stated in the coupon which is debited monthly to the beneficiary's account in the *Samurdhi* Bank to be withdrawn later; consumer goods that the beneficiary can buy up to the value stated in the coupon from the relevant cooperative retail outlet or authorized retail outlet; compulsory savings, insurance and a housing lottery.

(b) The Livelihood Development Programme: focuses on upliftment of the economy of low income families towards sustainable development. Projects target agricultural development, industry, animal husbandry and fisheries, marketing and services sectors. Under this programme there is a low interest banking loan schemes, enterprise development, and training for development of small scale enterprises such as book keeping.

⁵⁸ Discussions with the Commissioner and staff for the *Samurdhi* Programme in the Hambantota District. This is applicable to all areas where the programme is implemented and applies to the Ratnapura, Galle and Matara Districts.

(c) The banking programme: there are housing loans for low income households, self help loans, loans for disabled people, and equipment for small scale enterprises (upto Rs 3000/ for selected households) that the *Grama Niladhari* (village officer) recommends: The programme also has job training for youth and a *Samurdhi* job bank from which the private sector can obtain workers.

People's wellbeing is promoted by:

Samurdhi nutrition Programme - implemented with the intention of enhancing the nutrition level of mothers in *Samurdhi* Beneficiary low income families with new born babies by providing a stamp worth of Rs. 200/- (US\$ 1.6) which is issued monthly for the period of 12 months from the date of the baby's birth.

Samurdhi Social Development Programme which contains the:

- Intellectual and Social Development Programme. (e.g. *Sip dora* programme which offers scholarships for children of low income families)
- “*Diriya Piyasa*” Housing Programmes (for widows/low income/ War heroes/ disabled persons)
- Model Village Programme: Aim is to select a poor village in each Divisional Secretariat Division to provide infrastructure facilities needed by the community to make it a prosperous village rich in social values under the Intellectual Development Programme.

“*Samurdhi Kekulu*” Children's Club Programme

Samurdhi kekulu clubs hold cultural and literary competitions annually to harness cultural and literal skill of children.

(ii) Divineguma programme (island wide at District/Divisional Level)

The prime objective of this programme is to strengthen people's economic status and minimize their dependence on the market for food requirements. The programme is operational in the districts where the SBR occurs, and aims to improve nutritional levels, reduce cost of living in households, increase vegetable and food production by 25%, increase per capita vegetable consumption from 134g to 175g per day, create new income generation sources for families by selling excess production, and encourage entrepreneurship at the village level. The programme has 3 main phases, i.e., (1) Agriculture: main focus is home gardening, (2) Small scale industries: mainly focus is cottage industries and handicraft sector, and (3) fisheries and livestock: main focus is fishery, poultry and dairy sectors.

5.7 Local business or other economic development initiatives. Are there specific “green” alternatives being undertaken to address sustainability issues? What relationships (if any) are there among these different activities?

Priming funds were provided to CBO members through Community Trust Funds (CTFs) in the *Grama Niladhari* Divisions where the S/W Rainforest Participatory Project was operative to initiate resource enhancement and enterprise development. The CTFs gave out small loans to CBO members at low interest rates (1%-3%), which were recovered and credited back to the CTFs. This loan scheme is still in operation in most CBOs, but less people apply as the loans are small grants and people have advanced beyond such small loans. A range of small enterprises have been assisted by these loans. Examples are enhancing a traditional medicines clinic, establishing a centre to purchase tea leaves from small holders, a sales outlet for household linen embellished with fabric painting and embroidery; tailoring business, a poultry farm to supply to the villagers; establishing a motor cycle repair shop, a carpentry shop, a radio and electrical equipment repair shop, a franchise grocery store, confectionary business; manufacture of cement blocks (for construction); production of bricks, and bee-culture. Funds were also provided to enhance tea cultivation and tea land development; establishing manioc cultivation, mushroom cultivation, tea nurseries and banana and pepper cultivations. The training needed for enterprise development was also provided by the project. In addition people were provided with training for developing their enterprises and enhancing agricultural production. They were also provided with fruit, tea and timber plants to enhance their agricultural enterprises. A significant income is obtained from fruit cultivation in 2013. All these were meant to help people move away from activities that were threatening the conservation function of the CZ and to reduce the need for expansion of tea cultivation into the reserve to enhance household incomes. More on the GEF Rainforest Participatory project is described under sections 2.4.3, 2.4.7, 4.3, 4.5 and 5.5, 5.6 and 5.9.

5.8 Describe the main changes (if there are any) in terms of cultural values (religious, historical, political, social, ethnological) and others, if possible with distinction between material and intangible heritage.

(c.f. UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage 1972 and UNESCO Convention for the Safeguard of the Intangible Cultural Heritage 2003 (http://portal.unesco.org/en/ev.php-URL_ID=13055&URL_DO=DO_TOPIC&URL_SECTION=201.html) and http://portal.unesco.org/en/ev.php-URL_ID=17716&URL_DO=DO_TOPIC&URL_SECTION=201.html)).

There is no major change in cultural values. However, with development people are depending less on traditional methods of agriculture, medicine, ritualistic cures, etc. To some extent this had led to a loss of the associated knowledge and skills. During community meetings some members with skills in ritualistic methods of pest control, harm from wild animals, and cures for livestock lamented that these are no longer used as people depend more on western medication for livestock and on chemical pesticides. Overall, 80% of respondents (N=45) agreed that traditional behaviour and cultural knowledge should be conserved. Some of the village elders said that the younger people were more individualistic and not prone to participate in community initiatives which are a part of the local cultural tradition. However, this was not always the case observed during the review, and people still retained much of their rural culture to a great degree.

5.9 Community support facilities and services. What programmes in/for the biosphere reserve address issues such as job preparation and skills training, health and social services, and social justice questions. What are the relationships among them and with community economic development?

- Training for livelihood development

BOX 5: Training provided for CBOs through the GEF South West Rainforest Participatory Project

- Beauty culture
- Carpentry
- Computer programming
- Confectionary
- Driving heavy vehicles
- Fabric painting
- Floriculture
- Handicrafts
- Masonry
- Preparing jaggery and treacle from kitul
- Production of leather goods
- Tour guiding (for the reserve)
- T.V and radio repairing
- Tailoring
- English classes
- Cultivation of tea and land management (soil conservation, soil testing and fertilizer application), export agricultural crops, mushrooms, paddy, pepper in tea lands,
- Home garden development and cultivation of timber and fruit trees.

A systematic approach to training for entrepreneurial skills development was adopted through the Forest Department's buffer zone management programme under the SW Rainforest Participatory Project. Examples of training provided are in Box 5. The communities themselves selected the training programmes as well as the community members to be trained. The training was provided in collaboration of other government organizations such as the Tourist Board (now the Sri Lanka Tourism Development Authority), and the Tea Small Holders Authority, Export Crops Development Authority, and Department of Minor Export Crops, for appropriate providing vocational skills and improvement of agricultural practices.

The training was expected to help improve local livelihoods and provide alternative employment opportunities to reduce need for adverse use of forest land and forest resources and to support rural development.

- **Training in social mobilization:**

Selected members of communities in the buffer zone and the pilot project staff were trained in social mobilisation, including personality development and development of leadership skills in the community, particularly among the youth. Many young people also benefitted from this programme and many of the office bearers of CBOs during the project period were able to get jobs outside the SBR. Most project staff trained as social mobilisers were absorbed into the FD and some are working in the BRs at present.

- **Government training programmes**

The social security programmes of the government (*Divineguma* and *Samurdhi*) have targeted job preparation skills and training which are in operation in the district of the SBR. For example, the *Samurdhi* programme has job training, and a *Smurdhi* job bank from which the private sector can obtain workers.

- **Recourse to social justice**

There are mechanisms in place for social justice through the District Agriculture Committee of the District Secretariat where farmers can bring up any type of problem they have; the District Coordinating Committees (DCCs) also carry out conflict resolution, and there are representatives of NGOs and communities to express their problems. All persons have recourse to the law for legal action through Magistrate, District and High courts, as well as two superior courts of record.

5.10 What indicators are in place to assess the effectiveness of activities aiming to foster sustainable development? What have these indicators shown?

Please refer Tables 3, 7, 8, 9 & 10 and sections above under 5.0 for discussions on indicators.

Table 3 shows that 100% of local people consulted were willing to participate in environmentally friendly development initiatives. The other indicators show that people are now more aware of the need for sustainable development that does not harm the environment or the biological resource base. This has also led them to refrain from economic activities that necessitate encroachment, commercial tree felling and unsustainable NTFP extraction. This is possible because of the many initiatives taken for socio-economic development of local people by enhancing incomes from existing livelihoods, non-livelihood benefits and opportunities for alternative livelihoods. These have been coupled with better law enforcement and good managerial practices such as building a good relationship between SBR managers and local people. While the latter aspects is mainly in the areas that benefited from the GEF rainforest project, the FD is also trying to pursue this approach elsewhere in the SBR.

In addition the people of the SBR show enhanced economic status, with improvement in permanent housing, access to potable water and some form of electricity; most people have bank accounts, good sanitation, report increased agricultural productivity, and have better access to better roads, educational facilities and health care than in 2003.

5.11 What are the main factors that influenced (positively or negatively) the success of development efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective?

Providing tangible socio-economic benefits is vital to get communities involved in trialing and adopting sustainable development initiatives. While awareness creation under such situations is essential to convey the message to the community, awareness programmes alone do not help. In addition to providing livelihood benefits, the CBOs received many non-livelihood benefits that were felt by all in the village. These included provision of metal sheets, chairs etc. to use at ceremonial occasions which negates cutting trees to put up temporary tents for weddings and funerals; repairs to roads and streams that are sources of water to the villages, and religious ceremonies for the local people, and provision of English classes. The latter is continuing through the PCC

This approach was the main factor that positively influenced all development projects in the SBR. Among the other lessons learnt are that social upliftment and sustainable development programmes with a community focus are more long-lasting than those that promote individual household livelihood development efforts; a good exit strategy is essential at project closure and so is the continual monitoring of the CBOs or village organizations set up by economic development projects via a government institution. The social structure is such that communities find it hard to enforce regulations without the help of an external agency.

6. THE LOGISTIC FUNCTION:

[This refers to programs that enhance the capacity of people and organizations in the biosphere reserve to address both conservation and development issues for sustainable development as well as research, monitoring, demonstration projects and education needed to deal with the specific context and conditions of the biosphere reserve.]

6.1 Describe the main institutions conducting research or monitoring in the biosphere reserve, and their programmes. Comment on organizational changes (if any) in these institutions over the past ten years as they relate to their work in the biosphere reserve.

- **Research**

The Sinharaja Biosphere Reserve is used both for research, and capacity building for research in the country, using funds from local research foundations and collaborations with overseas funding agencies. They involve both basic and applied science and social science research by several universities, state agencies and NGOs. The Sinharaja BR is also a site for a global network of forest research plots, where long-term studies on the diversity and functioning of forests is being examined, under the sponsorship of the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI). Sri Lankan scientists have been working on several scientific initiatives as a part of the network under this programme. (see <http://www.ctfs.si.edu/>).

The Kudawa GN Division has also been chosen as a site for the FAO funded project “Mainstream Biodiversity Conservation and Sustainable use for Improved Human Nutrition and Wellbeing” carried out by the Ministry of Environment and Renewable Energy and Bioversity International.⁵⁹

Annex 4 gives the list of research programmes conducted in the SBR during the past 10 years, and the institutions that were involved. There have been no organizational changes in them of note with relation to the work done at Sinharaja. All research at Sinharaja has to be vetted by the Forestry Research Committee for approval (as with other research in Forests managed by the FD).

- **Facilities for research**

The KCC has a Research and Education Centre (REEK) and a Research station at Halmandiya in the CZ to provide accommodation for about 6 researchers. Funds for re-building the dilapidated kitchen and dining hall at the research centre were provided by the National Science Foundation, Sri Lanka.

To further climate studies, there is a weather station with a rain gauge and other sophisticated meteorological equipment installed by the Meteorological Department.

- **Monitoring**

- The monitoring function has been carried out by IUCN-Sri Lanka through a study of the fauna of the Sinharaja NHTA (Bambaradeniya et al, 2006).

- Sinharaja BR has been the long-term monitoring site for a global network of forest research plots, where long-term studies on the diversity and functioning of forests is ongoing under the sponsorship of the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI). Sri Lankan scientists are working on several scientific initiatives as a

⁵⁹ Source: Discussion with Mrs Pathma Abeykoon, Director Biodiversity Division, Ministry of Environment and Renewable Energy.

part of the network under this programme (see output publication in references). Four censuses have been carried out at this site to date. The results of the previous three censuses are being continuously used for global and regional data analyses & synthesis exercises in collaboration with international scientific community through ctfs.org (see their website) and for teaching and research training by using the SBR as an 'Out-door laboratory' for both local and overseas interest groups in accordance with DESD Programme of UNESCO. The field work of the fourth census of the Sinharaja FDP has been completed during 2012 & 2013 and the data entry work is being continued at present.⁶⁰

BOX 6: Global research links at the Sinharaja BR

“The Center for Tropical Forest Science (CTFS) is a global network of forest research plots and scientists dedicated to the study of tropical and temperate forest function and diversity. The multi-institutional network comprises close to fifty forest research plots across the Americas, Africa, Asia, and Europe, with a strong focus on tropical regions. CTFS monitors the growth and survival of approximately 4.5 million trees and 8,500 species.

The long-term, large-scale research on forests around the world aims to:

- Increase scientific understanding of forest ecosystem
- Guide sustainable forest management and natural-resource policy
- Monitor the impacts of climate change
- Build capacity in forest science “

The Sinharaja Biosphere Reserve is a part of this global network of forest research plots.

Source: <http://www.ctfs.si.edu/>

- The University of Colombo monitors the birds of the reserve.
- Manishka de Mel of the Environmental Foundation Limited received the UNESCO MAB Young Scientist’s Award in 2007 for her Research on Interactions and Socio-Economic Linkages between Local Communities and Protected Areas carried out in the Sinharaja MAB Reserve. This helped monitor the social aspects of the SBR.
- The University of Colombo monitors the birds of the reserve.
- The FD spearheaded a study to determine the changes in the biodiversity values of Southern Sinharaja and Kanneliya Forests after the implementation of GEF South West Rainforest Participatory Project (Jayasuriya & Abayawardana, 2008).

6.2 Summarize the main themes of research and monitoring undertaken over the past ten years and the area(s) in which they were undertaken in order to address specific questions related to biosphere reserve management and for the implementation of the management plan (please refer to variables in Annex I).

(For each specific topic provide reference citations. Provide the full citations alphabetically by lead author at the end of Section 6 or in a separate annex).

The Sinharaja 2009 Management Plan has taken into account the several biodiversity surveys and applied research carried out in the reserve when analyzing the goals and objectives of management as well as activities for the future. For example, the 2009 Plan identifies the need to train the Forest Department staff for continual monitoring of the reserve following the biodiversity survey by Jayasuriya & Abayawardana (2008).

Annex 4 provides the main research themes under which external parties have conducted research in the SBR - based on variables provided in Annex 1 of the Periodic Review form.

⁶⁰ Source: Prof. IAUN Gunatilleke, per com.

Section 6.1 provides information on some of the key monitoring related research conducted in the SBR during the past 10 years.

Research work by the FD includes:

- The demonstration plot set up by the Forest Department for cultivation of endemic forest species in the Sinharaja Forest Reserve at Monerakekilla (adjacent to the Education and Information Centre).
- Successful trials for under-planting Pinus stands with cane and other indigenous species in the Sinharaja buffer zone have been tested elsewhere (and harvest rates for rattan have been researched by the Forest Department (see introduction on ICC recommendations). However, extraction of cane from the SBR is not allowed as the damage caused by rattan extraction will be greater than the financial benefits as it would disturb the regeneration of these forests.

6.3 Describe how traditional and local knowledge and knowledge from relating to management practices have been collected, synthesized and disseminated. Explain how such knowledge is being applied to new management practices, and how and if it has been integrated into training and educational programmes.

This has not been pursued as yet. However, its importance is fully acknowledged in the Sinharaja Management plan of 2009. As such, this matter was discussed at the BR managers workshop held in connection with this review. Potential for promoting traditional methods of kitul tapping and product development, conserving and using knowledge about traditional medicines in the reserve for humans and livestock; and ritualistic cures for pest control and increasing harvest, were explored for future incorporation into the FD work programmes. It is hoped that these activities will be taken up by the FD in the future.

- Example of traditional knowledge has been used:

The 25 ha CTFs Forest Research Plot and other sites in Sinharaja BR are being used in analyzing ecosystem services (carbon sequestration, canopy species pollination periodicity, other plant-animal interactions). Local village youth are given priority in assisting these field research initiatives. The knowledge they gained through such participation, has helped them to be recruited as visitor guides at Sinharaja. The knowledge they have accrued over the years has been considerable. In turn, the researchers too have benefitted from their indigenous knowledge.⁶¹

- Dissemination of knowledge relating to management practices and training

Through the work carried out in the 25 ha plot within the SBR, the researchers are trying to find answers to the origin and maintenance of the rich biological diversity in tropical forests, and concurrently to examine the micro-scale (25 ha in Sinharaja) population dynamics over a 20 year period. The work spans 04 censuses to date and monitoring phenology (see list in Annex 5a) of selected plant species. Several ecologists and statisticians in the Faculty of Science at the University of Peradeniya have been groomed to take over the work in the future, including a statistician doing his Ph.D. in Germany, and a botanist and zoologist who will continue the work once the original researchers who have been overseeing it move out after the 4th cycle census work is completed.

6.4 Environmental/sustainability education. Which are the main educational institutions (“formal” – schools, colleges, universities, and “informal” services for the general public) that are active in the biosphere reserve? Describe their programmes, including special school or adult education programmes, as these contribute towards the functions of the biosphere reserve. Comment on organizational changes (if any) in institutions and programmes that were identified in the biosphere reserve ten or so years ago (e.g. closed down, redesigned, new

⁶¹ Source: Prof. Prof. IAUN Gunatilleke, per com

initiatives). Refer to programmes and initiatives of UNESCO Associated Schools networks, UNESCO Chairs and Centers where applicable.

- **Educational programmes:**

The Sinharaja NHTWA is used as an 'out-door laboratory' for teaching and research for school-, university-, and various other community-level programmes in line with the UN Decade of Education for Sustainable Development (DESD 2005-2014). A large number of school children visit the Sinharaja National Heritage Wilderness Area annually. Entrance is free for school groups or students in uniform who have a letter from the school principal. Schools are provided programmes at the KCC and PCC which have an information centre each.

Educational programmes are also held for schools and other institutions depending on the need of visitors or groups. Film shows are also held in the auditoriums, and night shows are provided on request to guests staying at the KCC at the smaller auditorium in the KCC dormitory complex.

Others are:

- Sinharaja BR has been used by researchers from the University of Colombo and an NGO (the Field Ornithology Group) as a pioneer project to bring in school children and their staff from the Northern Jaffna district to learn about rain forest ecosystems unique to South West Sri Lanka and to give the students an experience of the local livelihoods of villagers around Sinharaja BR, as the base to promote peace and security. A field station in Thondamannaru in Kankasanthurai in the north, destroyed during the conflict period, was also rebuilt as a reconciliation measure. This programme launched by academics from the University of Colombo is funded by a business partner Dilma Corporation. This contributes significantly to national reconciliation since the end of the civil war.
- Foot Mart Dhaka has been bringing students from an International School in Dhaka annually on an educational visit to the PCC.⁶²
- The SBR hosted the sixth International field biology course of the CTFS from 30 July - 28th August 2006. Twenty one students from nine countries participated, and 27 staff from local and overseas institutions gave lectures and practical instructions.

- **Progress since 2003 in terms of facilities for education:**

- The KCC information centre has been refurbished since the 2003 review with educational material that were being prepared (at the time) by students of the University of Peradeniya, and a new auditorium has been built. A new visitor centre has been completed at the PCC since 2003. These Centres are well equipped with lecture halls, audiovisual equipment, and printed extension materials and audio-visual material. All information centres have enthusiastic specially trained extension staff. Range Forest Officer (RFO) at the PCC conducts lecture programmes. The PCC does not have an extension officer but one of the Field Assistants has been assigned to this post and is carrying out the functions successfully. At both sites there are several field assistants who help the extension staff.
- The extension staff at the KCC, PCC and Neluwa Range Forest Office carry out annual schools programmes (i.e. including visits to schools). Some programmes are carried out at the KCC and PCC under different themes. Each centre does at least 5 programmes each year. For example, the theme in 2013 at the KCC was medicinal plants where students were taught how to propagate the plants from seedling and planting methods. The training was provided to 2 teachers and 5 students from each school who were expected to go back and train others.
- The number of visitor trails in the SBR has been increased. They now amount to: 6 trails from the KCC, 2 trails at the PCC, two trails at Morningside and one trail to the *Brahmana ella* from

⁶² Source : Mr A A S C Ranaweera, RFO PCC

Lankagama. As all visitors entering the forest from the PCC and KCC are accompanied by a knowledgeable guide, these trails also serve an educational function.

- Facilities for visitors and school groups are being upgraded. The KCC staff in charge of the Halmandiya research station in the SBR have had discussions with Biolan Finland to set up test composting toilets at this site for visitors (including large groups of school children) taking the *Sinhagala* trail. The outcome depends on whether Biolan decides to set up operations in Sri Lanka.
- The KCC has also built an open conference space with multimedia facilities to attract other organizations to use it for their conference activities, which will help the FD to spread their awareness campaigns to these groups as well.

6.5 How do you assess the effectiveness of actions or strategies applied?

(Describe the methods, indicators).

The following indicators were used to assess the logistic functions at the SBR:

- a) Facilities provided for research, extension and education in the IBR - by way of research stations, accommodation for researchers, etc.
- b) Number of research projects carried out during the past 10 years
- c) Number and type of extension and education programs conducted in the IBR
- d) Presence of dedicated visitor services and education officers in the protected areas of the CZ
- e) Community awareness on importance of forest/wildlife conservation and importance of the BR (people's perception)
- f) Biodiversity/habitat assessments carried out for monitoring

Overall, the review found that the logistic functions were carried out in a satisfactory manner by the FD. Fair services were provided for research, good services were provided for education and monitoring; a considerable number of valuable research projects had been and are being carried out in the SBR; a large number of education programmes are carried out each year for a varied audience (but the fact that this can be better targeted is known and it is being addressed); extension work has been considerable among communities during the SW Rainforest project, and though reduced now, they are continuing, resulting in good community awareness about the value of the forest which has resulted in forest improvement and reduction of adverse forest uses and extractions. Monitoring shows that the forest is regenerating well from past logging.

The following impact indicators as well as indicators in Table 11 were used to assess effectiveness of awareness carried out by the reserve manager for local communities:

- a) Awareness of the value of the SBR among youth (There was general consensus that the youth were as conscious of the value of the forest as the older people).
- b) Communities now understand that conserving the forest is in their best interests due to action taken by the Forest Department in the past
- c) The ecosystem, habitats and species in the SBR are better conserved now than 10 years ago (also see section 3)
- d) There is active involvement of communities in forest conservation.
- e) Improved relationship between local people and forest officers for forest management.
- f) Declining illegal tree felling and other illegal actions

All disagreed that there were still some threats to the forest (Table 11). Although there were forest extractions, they are mainly small scale (section 5.1 changes in forest uses). Some small scale extractions were by outsiders, with some support from a few village people (See change in forest uses section 5.1). It is noteworthy that respondents considered small scale extractions and other forest extractions that could be construed as biotheft (related to biopiracy) as affecting the ecosystems, habitats and species in the Sinharaja forest to some degree. This too can be attributed to the awareness programmes that have been carried out by the FD.

Table 11: Response to indicators of education and awareness carried out for local people

Indicators of education and awareness effectiveness	Percentage Response				
	Totally agree	Agree	Moderately agree	Disagree	Totally Disagree
Attitude change					
(a) Older people in the surrounding villages value the forests/wildlife more than young people					100
(b) Communities now understand that conserving the forest and wildlife benefits them.	100				
Behaviour change					
There were positive behavioural changes in the local communities towards conservation during the past 10 years	100				
Local people are willing to participate in environmentally friendly development initiatives	100				
Threats - trends during the past 10 years					
Illegal activities have been reduced in the Sinharaja forest during the past 10 years	100				
There are still some threats to the Sinharaja forest from villagers					100
Impacts					
The ecosystem, habitats and species in the Sinharaja forest are better conserved due to the past participatory project.	50		50		

Note: Some indicators are repeated from previous tables

6.5.1 Describe the biosphere reserve's main internal and external communication mechanisms/systems

Internal communication system:

- The management structure for the SBR is explained under section 2.3.4. Within this structure, The Range Forest Officers of Kalawana, Neluwa, and Deniyaya report respectively to the DFOs of Ratnapura, Galle and Matara. The Forester at KCC and the RFO at PCC report to the DFOs of Ratnapura and Matara respectively. The three DFOs report to the Regional Deputy Conservator of Forests (RDCF) in charge of the Sabaragamuwa and Southern Region. The RDCF reports back to the Senior Deputy Conservator of Forests in charge of the Environment Management Division of the FD head quarters. This structure is designed to provide adequate decentralization with regard to planning, management and financial control for enable work to proceed smoothly at the field level. Progress reports are sent from each RFO office through the Divisional Forest Offices of Ratnapura, Galle and Matara to the Division of Environmental Management at the Forest Department Head quarters. Visitor data and extension information is also sent to the Head Office from the field.

In addition there are:

- RFO conferences chaired by the Regional Deputy Conservator of Forests (RDCF) Sabaragamuwa and Southern Provinces. This is attended by all RFOs and DFOs that fall within these two provinces. Problems and issues are discussed and progress at various RFO offices are communicated.

- There are quarterly DFO conferences which are chaired by the Conservator General of Forests (CGF) where all DFOs discuss issues and communicate progress in their Forest Divisions.

External communication mechanisms

These are of two types: (1) communication for conservation and (2) problem solving and sharing lessons learnt. (1) occurs through the schools programmes and visitor education programmes at the KCC and PCC and audio-visual material that is produced for educational purposes - including a CD.

Type (2) communication is enabled through the District Coordinating Committee (DCC) meetings in which the District Secretary is the Secretary; and the District Agricultural Meetings which are chaired by the District secretary. At both types of meetings it is possible to communicate matters pertaining to the SBR to other sectors and groups. Due to the meetings organized through the periodic review process, there is now better opportunity to have a separate reporting line for the SBR at the DCC and DAC meetings within the Galle and Matara Districts which contain most of the TZ.

6.5.2 Is there a biosphere reserve website? If so, provide the link.

There is no specific website for the Sinharaja Biosphere Reserve, but there is a website maintained by the FD for the Sinharaja World Heritage Site which mentions that it is also a Biosphere Reserve.

http://www.forestdept.gov.lk/web/index.php?option=com_content&view=article&id=114&Itemid=116&lang=en

6.5.3 Is there an electronic newsletter? How often is it published? (provide the link, if applicable).

No

6.5.4 Does the biosphere reserve belong to a social network (Facebook, Twitter, etc.)? Provide the contact.

No

6.5.5 Are there any other internal communication systems? If so, describe them.

No.

6.6 Describe how the biosphere reserve currently contributes to the World Network of Biosphere Reserves and/or could do so in the future.

6.6.1 Describe any collaboration with existing biosphere reserves at national, regional, and international levels, also within regional and bilateral agreements.

- Many of the research projects span several local BRs as seen in Annex 4.
- The South West Rainforest Participatory Project was a pilot test to identify a model for community participation in forest conservation in the SW rainforests of the country. It was carried out in close collaboration with the management of both the Sinharaja and KDN BRs.
- The Sinharaja BR is part of the global network of long-term monitoring forest research plots, which collaborate under the initiative of the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI). The research at this plot involves seeking answers to the origin and maintenance of the rich biological diversity in tropical forests. Data have been collected through 4 censuses to date. The first three censuses have been used extensively for global and regional data analyses & synthesis exercises in collaboration with international scientific community through ctfs.org (see their website) and for teaching and research training as an 'Out-door laboratory' for both local and overseas interest groups in

accordance with DESD Programme of UNESCO'. Other Biosphere Reserves are part of this network.³⁷

6.6.2 What are the current and expected benefits of international cooperation for the biosphere reserve?

No current benefits of international cooperation. However, future benefits are expected as per discussions with field staff, communities, and the National MAB Committee. They are

- Twinning arrangements for BRS with other BRs having similar conditions to promote the 3 functions of a BR by sharing lessons learnt.
- Opportunities for short exchange visits by Sri Lankan BR managers to other BRs with similar conditions. It has been shown that conditions in most South Asian Countries are not applicable to Sri Lanka as people in the TZ are not dependant on the forests for their survival. Hence visits to countries that have high educational levels and where people are not dependant on forests will be most relevant to learn from methods used to engage stakeholders in such situations, and to learn how best to integrate conservation with development.
- Funding for BRs carry out reach and pilot studies that are valuable for reserve management and to demonstrate sustainable development.
- A more concerted programme to upgrade BRs by way of exchange visits and exchange programmes for BR managers and global award for BRs demonstrating the three functions.
- Better sharing of knowledge for successful BRs by way of film clips and workshops.

6.6.3 How do you intend to contribute to the World Network of Biosphere Reserves in the future and to the Regional and Thematic Networks?

The SBR has long since contributed to promote the functions expected of reserves in the WNBRS: The SBR contributes to demonstrate all three functions of a BR; It fulfils the function of conserving a unique biodiversity of global value; serves a learning laboratory on tropical rain forests to university students, school children and interested public; has served a significant role in contributing to national and international research on tropical forests (see section 6) and will continue do so in the future. Many research papers on the SBR have contributed to better scientific knowledge. The SBR is particularly important as a site to conserve globally threatened species and globally significant ecosystems. It has also carried out a successful community participation initiative that has resulted in better reserve management and sustainable development in the BZ and TZ. The lessons from this project can be used by other members of the World Network of Biosphere Reserves on how nature can be strictly conserved but yet enable people to live and prosper in areas where nature has high value.

6.7 What are the main factors that influenced (positively or negatively) the success of activities contributing to the logistic support function? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be favored as being most effective?

- Significant support was provided through the GEF Participatory Rainforest Project through strengthening of the extension service of the FD. Twelve trained social mobilisers from this project were absorbed into the FD staff and are now deployed in several range forest offices in the country including the Neluwa Range Forest Office. These officers are now playing a role in the education and extension services within the FD. The GEF project also helped to integrate the participatory approach to forest conservation with the collaboration of local people who are not dependant on forest resources.
- The visitor education centre at Pitadeniya which caters to many visitors was enhanced with support from the above GEF project.

- The Sinharaja BR is part of the global network of long-term monitoring forest research plots, where long-term studies on the diversity and functioning of forests is ongoing under the sponsorship of the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI). This enables international level demonstration of the logistic function of biosphere reserves, and is hence of great value to the global network of biosphere reserves. The data from this initiative in Sinharaja is used for global and regional data analyses & synthesis exercises in collaboration with international scientific community through ctfs.org (see their website) and for teaching and research training as an 'Out-door laboratory' for both local and overseas interest groups in accordance with DESD Programme of UNESCO. Also see 6.6.1.

6.8 Other comments/observations from a biosphere reserve perspective.

The logistic function of the SBR is carried out satisfactorily as is expected of a biosphere reserve. Improvements have been addressed in the 2009 Sinharaja Management Plan, which is however, due for revision in 2014.

The SBR has contributed to many important research initiatives and dissemination of research:

- An international conference was held in Kandy in July 2012 titled 'Restoring working forests in human dominated landscapes of the wet evergreen forest region of South Asia' for restoring the core and buffer zones of the BRs and other protected areas. This workshop was sponsored by the Environmental Leadership & Training Initiative of Yale University, USA. Work at the SBR was presented.
- The BRs in Sri Lanka including the SBR have been incorporated in to activities of international initiatives (CBD, UNFCCC and MA follow-up). Under this, a series of three workshops (Tokyo, Colombo, Kobe) on 'New Commons - Managing Shared Resources: Meeting the Challenges of a Rapidly Modernizing World Under Climate and Ecosystem Change' were held, sponsored by APN, DIVERSITAS, HYOGO, UNU-IHDP, UNU-ISP. The main objectives of these workshops were to identify new governance systems overseeing the management of the New Commons, supply of ecosystem services, and enhancement of socio-ecological resilience against climate and ecosystem changes, in an efficient and equitable manner across a range of stakeholders. A policy paper providing guidelines for the establishment and/or maintenance of "New Commons" landscapes and at least one scientific journal paper is in preparation.⁶³

7. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION:

[Biosphere reserve coordination/management coordinators/managers have to work within extensive overlays of government bodies, business enterprises, and a "civil society" mix of non-governmental organizations and community groups. These collectively constitute the structures of governance for the area of the biosphere reserve. Success in carrying out the functions of a biosphere reserve can be crucially upon the collaborative arrangements that evolve with these organizations and actors. Key roles for those responsible for the biosphere reserve coordination/management are to learn about the governance system they must work within and to explore ways to enhance its collective capacities for fulfilling the functions of the biosphere reserve.]

7.1 What are the technical and logistical resources for the coordination of the biosphere reserve?

- Capacity for coordination

The Forest Department is a state institution which is positioned under the Ministry of Environment and Renewable Energy (MoERE), headed by a Cabinet Minister. All agencies and departments under the Ministry meet quarterly to discuss progress and relevant issues. As seen below in section 7.4.3 cases 1 and 2, the assistance of the MoERE can be obtained for resolving inter-departmental and inter-ministerial conflicts in administering the SBR.

⁶³ Source: Prof. IAUN Gunatilleke, pers. Com.

In addition, the FD has various mechanisms for institutional collaboration for specific projects and programmes. These offer means of coordination between various agencies and groups, including policy makers, other ministries, other state departments, semi-government agencies, NGOs, local communities and indigenous groups. The FD is currently implementing the Sri Lanka REDD+ Readiness Preparation Project which involves close collaboration with all these groups. As such it has good capacity at the national level for collaboration with external groups and agencies as befitting the manager of a Biosphere Reserve.

At the regional level, the District Coordination Committees and District Agricultural Committees in the Ratnapura, Galle and Matara Districts, as well as the Divisional Coordinating Committees and Divisional Agricultural Committees within these Districts offer coordination mechanisms at the regional and local levels. Interest in the SBR at these levels have been activated during this review and it is expected that the FD will continue to exploit these channels for coordination and management of the SBR. At the local level, the CBOs formed under the South West Rainforest Project on the southern boundary offers the scope for the FD to coordinate with local people, while the KCC has evolved its own methods of coordination with local people until CBOs are set up along the northern boundary of the SBR.

In addition, the proposed SBR Coordinating Committee to be convened by the FD will offer very effective means of coordination with all stakeholders as needed for BR management.

Within the Forest Department, the institutional structure mentioned in item 2.3.4 has permitted coordination at different levels. Notably the SBR comes under one Regional Deputy Conservator of Forests (RDCF) for the Sabaragamuwa and Southern Region who is responsible for overall monitoring and coordinating all work pertaining to the SBR. (more details are given below)

- **Technical and logistic resources**

The SBR comes under a Regional Deputy Conservators of Forests (RDCF) for Sabaragamuwa and Southern Region and three Divisional Forest Officers who are technically competent for the work necessary for managing a Biosphere Reserve. The RDCF decides on financial allocations as per budgets forwarded through the DFOs, approves the annual plans, and generally oversees administration, and carries out monitoring at the regional level. The DFOs carry out a similar function at the divisional/district level. The actual protection activities; and logistic work pertaining to education, promotion of research and monitoring; are carried out by the Range Forest Offices (Kalawana, Neluwa and Deniyaya) and the KCC and PCC (the KCC is headed by a Forester (with RFOs under him), while the PCC is headed by an RFO).

All staff are trained after joining the service. The Range Forest Officers (RFOs) too have been trained at the Forest Department in-service Training Centre. There are also 3 trained extension officers operating from the KCC and Neluwa Range Forest Office, and one acting Extension Officer at PCC. All engage in education and extension work to promote the logistic functions of the SBR. They also provide the most effective means of coordination with the local communities as they are not part of the protection activities.

7.2 What is the overall framework for governance in the area of the biosphere reserve? Identify the main components and their contributions to the biosphere reserve.

The Forest Department (which currently comes under the Ministry of Environment and Renewable Energy) continues to manage the Sinharaja BR through the Range Forest Offices at Kalawana, Neluwa and Deniyaya, which report to the Divisional Forest Officers for Ratnapura, Galle and Matara, who in turn report to the Regional Deputy Conservator of Forests for the Sabaragamuwa and Southern Region. He reports to the Environment Management Division at FD Headquarters, which is headed by a Senior Deputy Conservator of Forests. While this may seem complicated, management and protection functions of the CZ are permitted through effective decentralization. Management decisions are taken at DFO level while all plans and programmes are approved and monitored through the RDCF who also has financial control. The KCC and Morningside functions under the Ratnapura Divisional Forest Office, the PCC functions under the Matara DFO office and the *Duwill ella* trail functions under the Galle DFO office. Responsibilities are clear cut at field level and well understood. The FD field staff are responsible for overall implementation of the 2009 Management Plan for the Sinharaja National Heritage Wilderness Area (FD & MOENR, 2009). The FD bears

responsibility of coordination on matters pertaining to the SBR with other stakeholders including district administration and communities (in the TZ) on private lands, and plantations also in the TZ.

During this review, as a result of discussions with district administrators, communities and large plantation owners as to how the coordination can be made more effective and inclusive, it was agreed that the FD will continue to be responsible for SBR management (taking into consideration that the CZ is also a World Heritage Site and a National Heritage Wilderness Area), but will convene a coordinating meeting for all major stakeholder groups. This would include representation of CBOs established by the FD (most of who are small scale tea cultivators), large plantation owners/managers and representatives of the National MAB Committee. The FD will also coordinate with regional administration via the District Coordinating Committees of Matara, Galle and Ratnapura (DCCs) as done previously, and also through the District Agriculture Committees of all three districts. The appointment of an overall coordinator/manager to develop the logistic and sustainable development functions of the Sinharaja Biosphere Reserve (SBR) is also being explored by the FD.

This change was initiated based on consultations during this review in agreement with the FD.

7.3 Describe social impact assessments or similar tools and guidelines used to support indigenous and local rights and cultural initiatives (e.g. CBD Akwé:Kon guidelines, Free, Prior, and Informed Consent Programme/policy, access and benefit sharing institutional arrangements, etc.).

CBD Akwé:Kon guidelines: Voluntary guidelines for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities.

While no specific guidelines have been followed, local people are consulted and informed of any activities of the FD pertaining to the CZ or forests in the BZ that may have an impact on people. For example, the management plans for the Sinharaja National Heritage Wilderness Area (NHWA) which deals with management of the external BZ (the TZ of the SBR) are prepared with community consultation. The GEF funded South West Rainforest Project was also developed and implemented with total agreement of the communities that were engaged. Both the Sinharaja NHWA Management Plan and National Forest Policy decrees that local people have to be adequately engaged in conserving the forest. The recent boundary marking of the forest has taken into consideration the long-term land ownership of local people, resulting in the exclusion of such lands from the reserve in consultation with local people.

However, as yet there is no formal mechanism for conflict resolution among people in the TZ of the SBR, and this depends to some extent on the personal approach by the FD staff. As such a SBR Coordinating Committee, in which all major stakeholder groups in the CZ, BZ and TZ are represented, is due to be convened by the FD to provide the mechanism to safeguard the rights of local people and others in the SBR. This can help conflict resolution within the SBR. Further, any infringement of rights by external parties perceived by the SBR CC can be taken up by the SBR managers with the respective Divisional Coordinating Committees, or the District Coordinating Committees, as relevant.

Benefit sharing mechanisms

- A community run sales outlet has been set up at the Kudawa Conservation Centre (KCC) for sale of locally produced commodities to visitors.
- Forty six young people (27 at Kudawa and 19 at Pitadeniya) from TZ villages work in the SBR as guides to visitors, and provide close links with their villages. Employment opportunities for guides are given based on education and adequate knowledge of English to provide services for foreign visitors. Three more pioneer village persons in the tourism business are granted guiding permission.

- Tourism has increased in the area and several guest houses and jeep owners benefit from the attractions offered by the SBR.
- Most households in the SBR use water from the forest, either piped to houses or directly from streams. This is permitted.
- The community has benefited in many ways for enhancing household income from the SW Rainforest Participatory Project.
- Many people gather forest resource, which is mainly small scale, and for domestic use.

7.4 What (if any) are the main conflicts relating to the biosphere reserve and what solutions have been implemented?

7.4.1 Describe the main conflicts regarding access to, or the use of, resources in the area and the relevant timeframe. If the biosphere reserve has contributed to preventing or resolving some of these conflicts, explain what has been resolved or prevented, and how this was achieved for each zone?

One of the main conflicts that arise periodically is the call for development of areas in the BZ and TZ of the Sinharaja National Heritage Wilderness Area, often by local people who have not been engaged through the South West Rainforest Participatory Project. For example, people in one *Grama Niladhari* Division wanted better access roads and other facilities which they see as denied to them due to the need to protect the Sinharaja National Heritage Wilderness Area which is also a World Heritage Site. It must be noted that due to the difficult terrain most roads are in poor condition and some are extremely narrow. As the Sinharaja NHPA is a national and world heritage, with a unique biodiversity, it is also a very special place to most people in the country, especially to conservationists. The Forest Department on the other hand realized the need to move away from a purely protectionist attitude to one where people's needs are also considered - but they are also committed to conserve the CZ and prevent any biodiversity erosion. These conflicting interests have given rise to problems periodically.

The means used to address these conflicts are in 7.4.3.

7.4.2 Describe any conflicts in competence among the different administrative authorities involved in the management of the area comprising the biosphere reserve.

Most lands abutting Sinharaja were owned by the Land Reform Commission (LRC) some of which were subsequently sold to private land owners. These lands were originally privately owned tea estates, but were vested in the government (within the LRC) in the mid 1970s based on a ceiling brought in for privately held land by the government. Later, many of these lands were abandoned and riveted back into secondary forest. Since 2003, the Forest Department made a bid to take over these naturally re-forested areas which were found to be rich in endemic fauna and flora. However, there was a conflict of interest between the FD and LRC to which these lands belonged, as the LRC wanted compensation to be paid for acquisition which the FD could not afford. After lengthy discussions the LRC has recently decided to hand over the lands to the FD, and the process of taking over and surveying is ongoing as explained above. These secondary forest areas at the eastern end of the SBR will form part of its BZ.

7.4.3 Explain the means used to resolve these conflicts, and their effectiveness. Describe its composition and functioning, resolution on a case-by-case basis. Are there local mediators; if so, are they approved by the biosphere reserve or by another authority?

1. Case 1: With regard to the abandoned tea lands that were earmarked by the FD for acquisition, there was a bid by a private individual to purchase a part of this land from the LRC on the basis that they were abandoned tea land and not forest. The FD was able to provide photographs as proof at

the Ministerial Meetings to show that the abandoned tea lands were indeed regenerating good rainforest. As such, the sale was stopped, and the acquisition procedure was continued.

2. Case 2: With regard to the LRC issue (expressed under 7.4.2), the Ministry of Environment under which the Forest Department functions was able to help with conflict resolution to enable the FD to continue with land acquisition.

3. Case 3: In an area to the northeastern side of the reserve, there was an attempt by the local people to construct a public road in the BZ of the Sinharaja NHTWA without any proper environmental assessment which is mandatory. As this would bisect an area connecting the NHTWA with adjacent forests which were also extremely rich in biodiversity, it was highlighted in the media and caused grave concern among environmentalists. As the road was outside the NHTWA which forms the CZ of the SBR and the World Heritage Site, the FD had no legal jurisdiction in this area. As such, the matter was subjected to a Ministerial (Ministry of Environment) inquiry, and a scientific committee was appointed by the Ministry to report on this matter. The Report of the scientific committee was received very favourably and alternative routes were suggested for implementation.⁶⁴

4. Case 4: The Lankagama - Mederipitiya Road passing near the Pitadeniya CC has been a contentious one for a long time. This road existed as a traditionally used footpath, and has been since widened to permit a motorcycle or a three wheeler. However, the concerns of conservationists have prevailed so that the road was not permitted to be widened further. The local people say they are severely constrained without a motorable road for a small van that can be used for school transport or to carry a sick person. Conservationists are understandably worried that any road widening near the reserve can lead to heavy traffic which can affect the unique biodiversity of the adjacent World Heritage Site. Recently a bid to widen the road was reported in the news papers with much concern. However, the FD has understood the situation and has been able to ensure a minimum widening of the road (2') within private lands which will not have a perceivable impact on the reserve. It is being done under the observation of the FD. The Approach adopted by the FD is that total restriction of development is unfair and that reserve conservation will be more jeopardized with disgruntled local people. However, no road widening within the boundary of the CZ will be permitted as of now, but the situation will be reviewed if necessary and monitored to ensure that there is no perceptible damage to the NHTWA. The Review Team spoke with the local people and the forest officers and found that there was a tacit understanding between them that the Sinharaja NHTWA should not be harmed.

While moving away from a policing approach by the FD to a more "people considerate" approach has helped solve many conflict of interest, this also to some degree depends on the individual offers concerned. Hence a more formal coordination of different interests in the SBR between forest managers, people, local administration and district administration is required to ensure good science-based participatory and collaborative management for the SBR. This is the objective of the proposed SBR Coordinating Committee to be convened by the FD. Also the consultations and awareness programmes carried out in connection with the Periodic Review has created a high interest in the SBR and the BR concepts within the District Administration. As such issues and conflicts within the SBR will be better addressed through the already existing District Coordinating Committee (DCCs) and the District Agricultural Committees (DAC) which are attended by the Divisional Forest Officers (DFOs) for Gale, Matara and Ratnapura Districts.

7.5 Updated information about the representation and consultation of local communities and their participation in the life of the biosphere reserve:

7.5.1 Describe how local people (including women and indigenous people) are represented in the planning and management of the biosphere reserve (e.g., assembly of representatives, consultation of associations, women's groups).

Please see items 7.2 and 7.3. At present the main mechanism for consultations with local communities are through the CBOs set up for the South West Rainforest Participatory Project as the

⁶⁴ Personal communication by Prof. IAUN Gunatilleke, member of the said scientific committee and member of the National MAB Committee.

FD extension officers and Field Assistants (and Range Forest Officers on special occasions) attend the monthly meetings of the CBOs. As this is confined to some areas of the SBR, a formal consultation mechanism is lacking at present. However, volunteer guides and informal means are being used to facilitate consultation and discussion between the local people and FD in other areas such as Kudawa. However, this is largely dependant on the individual personality of the FD field staff, so that a more formal system of consultation (such as the proposed coordinating committee) is a vital need.

In the GN Divisions where there are active CBOs set up under the GEF South West Rainforest Project (which cover most of the TZ) there is very good representation of women among the CBO members who are local people. Within the CBOs men and women have equal status for decision making and often many of the office bearers are women. The KCC is actively increasing its female representation among the volunteer guides who play a major role in linking the CZ with the local people. At present there are 2 female guides, but this is due to be increased to 30% at least. Further, in the tea economy, most of the tea small holders use family labour so that both men and women of the family work together in their tea plots. Women are not perceptibly under valued in the SBR as in many developing countries due to high level of female education.

At present, community participation is enabled in various district administrative structures, initiatives and projects. For example:

- The DCC and DAC have community representation, but these committees are not only for the SBR but cover the relevant districts.
- The CBOs set up by the GEF SW Rainforest Participatory Project have undertaken micro-planning and taken decisions regarding their villages, and as to who and what should be funded through the revolving funds set up for their CBOs. The groups consulted during the focus group discussions suggested that the CBOs should be represented within the SBR Coordinating Committee.
- The *Samurdhi* programme in operation in the Ratnapura, Matara and Galle Districts has its own community groups that decide on certain matters - there are *Samurdhi* officers and committees who can approve and reject community applicants for state *Samurdhi* aid. Women are well represented in these committees.
- The *Grama Niladhari* (who reports to the Divisional Secretary) works at village level with communities in the TZ and provides a link with the divisional and district administration.
- There are Women's Development Officers or WDOs (who come under the Women's Bureau of the Ministry of Child Development and Women's Affairs) who deal with women's socio-economic empowerment, and address violence prevention/protection, but even so the economic development of women is the main focus of the WDOs. This work is done through their links to the community, both generally and through the Women's Societies they establish at village and divisional level.

7.5.2 What form does this representation take: companies, associations, environmental associations, trade unions (list the various groups)?

The established means of representation of local people in the management of the SBR is as yet through the CBOs set up under the SW Rainforest Participatory Project. This will be finalized once the SBR Coordinating Committee is set up.

7.5.3 Indicate whether there are procedures for integrating the representative body of local communities (e.g., financial, election of representatives, traditional authorities).

Selected CBO representatives from the GEF rainforest project and other key CBOs active in the TZ will be in the SBR CC to be set up. The means to select them would have to be worked out according to free and fair means.

7.5.4 How long-lived is the consultation mechanism (e.g., permanent assembly, consultation on specific projects)?

The SBR CC is meant to be a long-term consultation mechanism but specific details will be available only when it is set up.

7.5.5 What is the impact of this consultation on the decision-making process (decisional, consultative or merely to inform the population)?

Up to now, consultations through the CBOs have been mainly consultative and informative. However, the exact impact of consultation on the management decision making process would be determined once the new SBR CC is established by the FD.

7.5.6 At which step in the existence of a biosphere reserve is the population involved: creation of the biosphere reserve, drawing up of the management plan, implementation of the plan, day to day management of the biosphere reserve? Give some practical examples.

At present people have been involved with the preparation of Management Plans for the Core and Buffer Zones. Through this review all major stakeholders: National MAB Committee, BR managers (FD field, district level and head quarters staff), local people, plantation owners, and district and divisional administration were consulted on the revised zonation.

7.6 Update on management and coordination structure:

7.6.1 Describe any changes regarding administrative authorities that have competence for each zone of the biosphere reserve (core area(s), buffer zone(s) and transition area(s))? If there are any changes since the nomination form/last periodic review report, please submit the original endorsements for each area.

There are no changes.

7.6.2 Update information about the manager(s)/coordinator(s) of the biosphere reserve including designation procedures.

There have been no changes, as the Forest Department continues to be the management authority of the SBR.

7.6.3 Are there any changes with regard to the coordination structure of the biosphere reserve? (if yes, describe in details its functioning, composition and the relative proportion of each group in this structure, its role and competence.). Is this coordination structure autonomous or is it under the authority of local or central government, or of the manager of the biosphere reserve?).

As stated above, a new mechanism will be established by the FD to coordinate all major stakeholder groups in the SBR. The members for the Committee will be decided through a consultative process. The meeting with the large plantations has already occurred; meetings with communities are due. The SBR Coordinating Committee will be totally autonomous and under the FD (which functions under the Central Government).

The regional coordination process will be mainly through the District Coordination Committees (DCCs) which are under the Provincial Government.

7.6.4 How has the management/coordination been adapted to the local situation?

Please see items 7.1, 7.2, 7.3 & 7.5

7.6.5 Was the effectiveness of the management/coordination evaluated? If yes, was it according to a procedure?

Several indicators were used to assess management/coordination within the SBR. Tables 3, 7, 8, and 9 provide direct and indirect indicators for effective management, including integrating economic development of local people with reserve conservation - as perceived by local people. Table 12 used direct observation during the review in terms of effective management of the CZ to meet its conservation functions, awareness of the importance of the CZ among regional administration, coordination arrangements with regional administration for conflict resolution, awareness of the regional administration about the SBR and its functions, level of coordination regarding land use in the SBR for regional coordination and planning, links with socio-economic development initiatives at the district level, and voice of local people being heard by BR managers.

Further, discussions with BR managers regarding adoption of a participatory approach with the engagement of local people showed that they readily acknowledged that this increased management effectiveness of the Sinharaja NHTWA compared with the policing approach employed before GEF rainforest project. While some lesser threats such as removal of specimens and small trees of commercial value still remain, illegal activities such as encroachment for tea cultivation and large scale tree felling that threatened the conservation functions of the NHTWA have been halted or reduced, with the help of vigilance among local people.

Table 12: Indicators for management/coordination within the SBR:

Indicator	Current position
1. Management effectiveness of the CZ by FD	<p>There has been positive development since 2003 with a further decline of illegal tree felling and encroachment in the CZ. While some illegal extractions do happen, there are mechanisms in place to halt such actions. The FD has built a firm foundation for working with the local communities where the SW Rainforest participatory project was functional and is making a concerted effort to spread this experience to other areas, although constrained by the lack of funds to replicate the full GEF project. Also much of the forest offences recorded since 2003 at Kudawa (where this project was not established) are due to possession of unlicensed fire arms (used for hunting) or possession of game meat of protected species rather than actual forest felling, encroachments or extractions.</p> <p>All people consulted agreed that the participatory management approach adopted by the FD since the GEF rainforest project has helped forest conservation (80% agreed or totally agreed, others moderately agreed).</p>
2. Awareness of CZ during development activities in the three districts as a whole.	All district development plans take note of the CZ which is also a World Heritage Site.
3. Coordination with district administration for conflict resolution within the CZ	Conflict resolution has not been required at the District Level because the Sinharaja NHTWA is a national (and World Heritage Site) and major conflict situation is taken up at the national level. FD attends to minor conflict resolution.
4. Awareness of District Administration about the functions of the CZ, BZ and TZ	At the start of the review process, there was good understanding about the functions of the CZ, but poor understanding of the functions of the BZ and TZ. This has now been rectified with awareness programmes at the District Secretariats (DS) and officials in the Galle and Matara District

Indicator	Current position
	Administration. At present there is good understanding about the BZ and TZ and willingness for the district administration to contribute to the good management of the SBR.
5. Coordination during proposed land use changes in the three zones for development.	There was coordination only with respect to land within the Sinharaja NHTWA which is set apart for conservation. The District Administration is now aware of the zonation and what could be done in the BZ and TZ and it is expected they will act accordingly. The SBR Maps have been provided to them as well.
6. Links with district socio-economic development initiatives with SBR activities in the TZ	This was found to be low, but after the awareness programmes that were carried out in 2013, the potential for linking these initiatives with the existing SBR activities was appreciated by the District Administrators, <i>and there were pledges for support which the FD has to follow-up.</i>
7. Relationship between local people and forest officers	There is good understanding now between the FD and local people in the SBR (77.2% agreed/totally agreed, others moderately agreed).
8. Voice of local people in the SBR to address pressing needs. <i>(In 2003, 60% of all community members questioned were largely/totally confident that the Forest Department will communicate to them major decisions regarding the Sinharaja forest and consult them on necessary action; 26% disagreed, of these and all were from outside the participatory management pilot sites.).</i>	However, almost all totally disagreed that communities have a voice in conserving/managing the SBR (indicating the lack of involvement with decision making), but all felt totally (50%) or moderately (50%) confident that the FD will communicate to them major decisions regarding the SBR and consult on necessary action. At community meetings the review team saw that people are not afraid to question the FD staff and the field staff (met during the review) thought it incumbent to provide replies, which were accepted by the communities. The District Agriculture Committee provides a good forum for people's representatives to voice their opinions and for resolution of conflicting interests - especially regarding land matters as this is attended by representatives of all government departments, is headed by the DS and there is a mechanism for people's concerns to be addressed where they impinge on agriculture, fishery, and land use.

7.7 Update on the management/cooperation plan/policy:

7.7.1 Are there any changes with regard to the management/cooperation plan/policy and the stakeholders involved? If yes, provide detailed information on process for involvement of stakeholders, adoption and revision of the plan.

Since 2003, a comprehensive management plan for the Sinharaja Heritage Wilderness Area has been prepared in 2009 which covers the needs of the SBR. However, as new BZ areas have been added and the TZ is newly demarcated, this needs to be updated in the next revision of the Management Plan which is due in 2014.

The Forest Department staff who prepared the management plan have spent time in the field talking to local people and to FD field staff.

7.7.2 Describe contents of the management/cooperation plan (provide some examples of measures and guidelines). Is the plan binding? Is it based on consensus?

The Management Plan for the SBR is a legal requirement under the Forest Ordinance Amendment Act No 65 of 2009 which is enforced by the FD. Accordingly the Sinharaja Management Plan and regular updates are a legal requirement. Consensus has been sought with communities and the plan clearly follows a people considerate approach which is requested in the Forestry Sector Master Plan and the National Forest Policy of 1995 (see 7.7.3 for approach towards communities). This approach is being followed by the field staff. While a management plan is binding, shortage of funds has precluded implementing some of the actions. However, they can be incorporated into the next Management Plan.⁶⁵ Further, all forest ranges have Forest Range Plans, and Management Plans are prepared for individual forests. The SBR also comes within the range plans of the Kalawana, Deniyaya and Neluwa forest ranges, as well as annual plans prepared by the officers in charge of the KCC and PCC.

The 2009 Management Plan comprises three sections with 8 Chapters as follows:

Contents of the plan:

Chapter 1: Background and Conceptual Framework (Sinharaja forest, management, ecosystem approach as per the CBD, International significance of the Sinharaja Forest [as a MAB reserve, WHS]; National significance: Forest policy and legislation; links with Millennium Development Goals; Goals, Purpose and Objectives of the Plan; and Application of the Plan: structure, scope and operation of the plan.

Chapter 2: Biological Diversity: Maintenance of Forest Area⁶⁶, Arresting degradation of biodiversity quality, Establishing an internal mechanism within the FD to monitor biodiversity, greater attention to the management of fauna - especially mammals [including problems to fauna from forest isolation].

Chapter 3: Regulatory Ecosystem Services: Control of human induced soil erosion, assessing and monitoring water flow from the forest; assessment and maintenance of carbon sequestration capacity.

Chapter 4: Livelihood Development:⁶⁷ Identification of the Sinharaja Buffer Zone⁶⁸, Improvement of income generating activities, improvement of microfinance services among BZ communities,⁶⁹ Vocational training, Infrastructure and basic services development⁶⁹; Resolving land tenure problems⁷⁰ Strengthening community based organizations⁷¹ and improving income generation activities, Protection of traditional wilderness based customs.

Chapter 5: Recreation: Development of a Comprehensive Ecotourism Plan, improvement and development of facilities for ecotourism, Establishment of linkages with other stakeholders,

⁶⁵ Source: Discussions with the Conservator General of Forests

⁶⁶ Addresses need for acquisition of adjacent forests, leaving some as forest reserves to enable human-forest interactions; and need for boundary re-definition by excluding old encroachments, villages and private lands from the NHTA.

⁶⁷ Accepts that villagers regularly collect various NTFPs without official permits, but concurs that complete enforcement of the law and regulations on NTFPs collection (when not damaging) seems unethical and even socially unacceptable as such attempts may result in conflicts between people and forest officers which might result in more harmful consequences.

⁶⁸ At the time the SBR had no TZ.

⁶⁹ Takes into consideration the basic difficulties of local people due to bad roads that need 4 wheel drives, that impacts on the tea economy due to marketing difficulties; health and education facilities, leads to low incomes, etc. [of note is that health and education as well as roads had improved by 2013 to some extent, in most areas]

⁷⁰ Includes boundary definition and accepts that at the moment of Plan preparation the TZ is used as the BZ

⁷¹ Recommends that the FD can play a major role in catalyzing and monitoring the organizational strengthening process for the CBOs.

Involvement of buffer Zone communities⁶⁰ in ecotourism, Conservation of the aesthetic value of the forest, Mitigation of negative impacts of tourism on natural and socio-cultural environment.

Chapter 6: Research and Education: Improvement of facilities for researchers in Sinharaja, Developing a research plan taking into consideration management needs and biodiversity monitoring; Improvement of educational facilities - including preparation of a planned programme for environmental education, and expanding the scope for environmental education including curricula for different interest groups, and the need to prepare a website.

Chapter 7: Institutional and Legal Framework: Development of appropriate institutional structure, Human resource development, Improvement of the legislative framework, Providing adequate infrastructure, Monitoring, Evaluation and improvement of the management plan.

Chapter 8: Operational Plan and Budget.

7.7.3 Describe the role of the authorities in charge of the implementation of the plan. Describe institutional changes since the nomination form/last periodic review report. Please provide evidence of the role of these authorities.

The Forest Department (FD), is the main state institution responsible for the management, protection and the development of all forests/forest resources in the island, except for areas designated as wildlife reserves which are under the Department of Wildlife Conservation. The work of the FD is influenced by:

(a) the Forest Policy of 1995 which decrees that : “the traditional rights, cultural values and religious beliefs of people living within or adjacent to forest areas will be recognised and respected.” And that although natural forests will be primarily allocated for conservation, “the state will, where appropriate form partnerships with local people, rural communities, and other stakeholders, and introduce appropriate tenurial arrangements.”

(b) the Forestry Sector Master Plan of 1995 which is in effect from 1995- 2020.

Implementing the Management plan for the SBR is the sole responsibility of the FD.

7.7.4 Indicate how the management plan addresses the objectives of the biosphere reserve.

The Management Plan specifically states that it presents strategies and approaches to manage the Sinharaja NHWA in a sustainable way by considering its national and international significance and that the management plan is developed considering the goals and objectives of a Biosphere Reserve.

As seen in item 7.7.2, the plan comprehensively covers management objectives for conservation of biological diversity and enhancing the roles of the reserve for sustainable development of local communities, and for provision of logistical functions through enhancement of facilities and capacity for research, education and continual monitoring. This covers the basic three functions of a BR: Conservation, development and provision of logistic support through research, education and monitoring. It also highlights the need for protection of traditional wilderness-based customs, and documentation of forest based practices related to spiritual and traditional customs. It also proposes to allow local people to maintain their traditional wilderness based lifestyles without affecting conservation objectives.

7.7.5 What are the progresses with regard to the guidelines of the management/cooperation plan/policy

Progress has been made to increase the conservation function by boundary marking, better law enhancement with the participation of local people; visitor services have been improved, facilities for education and research and visitor accommodation have been enhanced; the management approach has been made more people friendly. The development aspect has been carried out via the SW rainforest Participatory Project. However, lack of funds has impeded implementation of some activities, particularly further development of ecotourism, and extension of the community participation project around the entire reserve. These are expected to be incorporated into the new management plan.

7.7.6 Were there any factors and/or changes that impeded or helped with the implementation of the management/coordination plan/policy? (Reluctance of local people, conflicts between different levels of decision-making).

Lack of funds was an impediment. While Management Plan budgets are made on a long-term basis (2009-2014), government funds are released to departments on an annual basis. As there is high competition for annual funding among various government departments and programmes, it is difficult to predict available government funding for multi-year management plans. The local funding has been supported by project funding for the GEF South West Rainforest Participatory Project and the ADB funded Forestry Sector Management Project (FRMP) for many of the more costly activities such as community mobilisation, and boundary marking, management plan preparation, etc.

7.7.7 If applicable, how is the biosphere integrated in regional/national strategies? Vice versa, how are the local/municipal plans integrated in the planning of the biosphere reserve?

(Please provide detailed information if there are any changes since the nomination form/last periodic review report).

The Sinharaja BR is specifically considered in the Southern Province Biodiversity Profile and Conservation Action Plan published by the Biodiversity Secretariat of the Ministry of Environment and Renewable Energy in 2008 (Gunawardena, 2008). The National Physical Planning Policy and Plan Gazetted in 2011⁷² has categorized the region in which the SBR occurs as an environmentally sensitive area where development has to be controlled. The CZ of the SBR also falls into Category I in the NPPP&P - which are Restricted Areas where new development in Protected Areas in this category will be prohibited.

8. CRITERIA AND PROGRESS MADE:

[Conclude by highlighting the major changes, achievements, and progress made in your biosphere reserve since nomination or the last periodic review. How does your biosphere reserve fulfill the criteria. Develop justification for the site to be a biosphere reserve and rationale for the zonation. What is lacking, and how could it be improved? What can your biosphere reserve share with others on how to implement sustainable development into practice?]

Brief justification of the way in which the biosphere reserve fulfills each criteria of article 4 of the Statutory Framework of the World Network of Biosphere Reserves:

1. "Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions".
(The term "major biogeographic region" is not strictly defined but it would be useful to refer to the Udvardy classification system (http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)).

The Sinharaja Biosphere Reserve (SBR) falls within the Indo-Malayan Realm. It was designated an International Biosphere Reserve (IBR) in 1978 as representative of the Tropical Humid Evergreen Forest Ecosystem of the Indo-Malayan Realm. The SBR is located in the southwestern wet lowlands of Sri Lanka believed to be floristically the richest region in South Asia (Ashton and Gunatilleke, 1987). After careful review of Biosphere Reserve functions, a redefinition of the SBR zonation was carried out to enable a gradation of human interventions in an area having a mosaic of ecological systems - from human modified areas where people live and engage in mainly tea cultivation while contributing to sustainable development, high quality Buffer Zone forests, to a Core Zone of exceptional biodiversity value - including an area designated by UNESCO as a Natural World Heritage Site due to the rich biodiversity and endemism among its flora and fauna. The Sinharaja BR is located in the wet lowlands of Bio-region 4, which is one of four terrestrial bioregions prioritized out of eight in the 1999 (current) national Biodiversity Conservation Action Plan (BCAP) for Sri Lanka (MoFE, 1999).

⁷² The Gazette Extraordinary of the Democratic Socialist Republic of Sri Lanka No. 1729/15 - Thursday, October 27, 2011

2. “Be of Significance for biological diversity conservation”.

The Sinharaja forest is specifically identified in Sri Lanka’s Biodiversity Conservation Action Plan as one of the richest sites for biodiversity and endemism within the lowland wet zone. Sinharaja has a mosaic of vegetation types covering lowland wet evergreen forests for which it is world renowned, as well as some sub-montane forests and grasslands (FD/MoERE, 2009). Numerous freshwater systems and rocks and other ecosystem types contribute to its high species diversity. Within the lowland forests there are three main vegetation types ranging from the lower slopes and valleys (150 m - 600 m), to middle slopes (>600 m - <1000 m), and upper slopes and ridges (>1,000 m). Each vegetation type has distinct species and structural variations: *Dipterocarpus* communities in the lower areas, *Messua-Shorea* communities in the mid slopes to sub-montane vegetation in the upper slopes where typically stunted montane vegetation occurs in the exposed summits (de Zoysa and Raheem, 1990). The eastern section of the reserve has sub-montane forests, and grassland habitats which may be the result of paddy cultivation even at the end of the 19th century (Dela, 2003). Thus the reserve shows considerable micro-climatic differences within a relatively small spatial area, (MOFE, 1999). The National Conservation Review (NCR) which culminated in 1996 (IUCN/WCMC/FAO,1997) found that of the forests surveyed, Sinharaja was had the highest species richness for woody plant species, and the second richest for faunal species. The SBR supports a total of about 359 species of vertebrates including 46 species of fish, 52 amphibians, 95 species of terrestrial reptiles, 125 birds and 41 mammals and at least 119 species of butterflies. The Angiosperm flora at the Sinharaja number about 331 species of which over half are endemic.

3. “Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale”.

(Including examples or learning experiences from putting sustainable development into practice).

The TZ of the SBR (new zonation) can demonstrate a model for sustainable development in areas of high natural value, without eroding the biodiversity of those areas by people living in or near them. The GEF funded South West Rainforest Participatory project has effectively served to wean away people who were previously engaged in: forest encroachments for tea cultivation to increase their incomes, illegal and damaging tree felling for removal of timber, and over-harvesting of NTFPs for domestic use or sale. Through the project it has been possible to convert the local people into a group of persons who are actively participating in forest conservation by acting as unofficial vigilance groups while they have also increased their household incomes. This project has contributed significantly to socio-economic advancement of local people by enhancing their existing livelihoods, by offering opportunities for alternate livelihoods and non-livelihood incentives. It offered the first model for participatory forest conservation in an area where people were more dependant on tea cultivation rather than forest extractions for their main means of livelihood.

4. “Have an appropriate size to serve the three functions of biosphere reserves”.

The entire SBR is 29830 ha. It has a sizable terrestrial core area (11427 ha) with a mosaic of habitat types and a very high biodiversity, a BZ (redefined and added) with good forests and plantation forest (16316 ha), a newly defined (as requested by the ICC) TZ (2087 ha) where people have been engaged in development and assisting biodiversity conservation.

5. Appropriate zonation to serve the three functions

The Core Zone is a legally designated National Heritage Wilderness Area which has the highest conservation ranking for a forest in Sri Lanka, and is devoted entirely to long-term protection and conservation of biodiversity. Its size is sufficient for this purpose, and permits the inclusion of a range of ecosystems. The BZ has been re-defined to include very high quality secondary forests, and regenerating tea lands which also contain good forest. While due to lapses in defining the NHWA boundary, there is inclusion of some villages in the CZ and BZ, they will be excluded in the future once the FD is able to commence a boundary re-definition. The forest area is already boundary marked on the ground. The TZ has been newly defined as advised during the 2003 review, to include areas where sustainable resource management practices have already been established. A map of the zonation is supplied.

6. “Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve”.

The existing organizational arrangement will prevail. i.e. the SBR will be managed by the Forest Department which is responsible for obtaining the participation of public authorities, local communities and private interests in the design and carrying out of the functions of the SBR. To make this more effective the FD proposes to establish a SBR Coordinating Committee that has all major stakeholder groups including Communities in the TZ and large plantations in the TZ. In addition, the National MAB Committee and FD have brought the SBR to the notice of the district administration which is expected to provide a slot for Biosphere Reserves in the district/agriculture coordinating committees.

7. Mechanisms for implementation:

- a) Mechanisms to manage human use and activities
- b) Management policy or plan
- c) Authority or mechanism to implement this policy or plan
- d) Programmes for research, monitoring, education and training
- a) Mechanisms to manage human use and activities

The participatory approach for which the GEF South West Rainforest Participatory Project provided the model is recognized as the best means of managing human use and activities rather than law enforcement or awareness/education alone. This is being followed in the SBR and is recommended in the 2009 Management Plan for the Sinharaja NHWA.

b) Management policy or plan

There is a very comprehensive Management Plan for the Sinharaja NHWA (CZ, BZ and TZ), which deals with the conservation, development and logistic functions of the SBR. It particularly accepts that supporting sustainable development of communities is a means of reducing adverse impacts on the valuable biodiversity of the CZ.

The existing Management Plan is due to be revised in 2014. It is expected that newly identified TZ and redefined BZ will be directly addressed in the revised plan and that it will take into consideration the functions of the different zones, the management authority of the FD and the role of the other stakeholders in the SBR Coordinating Committee.

c) Authority or mechanism to implement this policy or plan

The Forest Department has authority to implement the Management Plan.

d) Programmes for research, monitoring, education and training

The FD is already implementing programmes for environmental education, research, monitoring and training at the SBR, including links with global initiatives. It has adequate infrastructure, facilities and staff support to do so. There are plans to continue improving these facilities while continuing with the wide-ranging education activities they carry out annually. The SBR will also continue to support the many research programmes that are functioning in the reserve. A programme for researchers to share their aims and objectives and findings with the local people and FD field staff is scheduled to commence in March 2014.

Does the biosphere reserve have cooperative activities with other biosphere reserves (exchanges of information and staff, joint programmes, etc.)?

The participatory model piloted at the Sinharaja and KDN reserves involved close collaboration between the reserves for this project. The model has also been successfully in the Bundala BR and in the newly demarcated TZ of the Hurulu BR, although there was no collaboration between the SBR and these reserves.

At the regional level:

Not yet, but interaction was initiated during the review process, and is expected to be followed-up.

Through twinning and/or transboundary biosphere reserves:

There are no twinning programmes, but this should be explored in the future. There can be no transboundary BRs as this is a terrestrial BR and Sri Lanka is an island.

Within the World Network:

Not yet. But it is considered essential to develop programmes with other BRs, especially with others where people do not directly depend on forest resources and where the TZ contains developed areas.

Obstacles encountered, measures to be taken and, if appropriate, assistance expected from the Secretariat:

- There have been no main obstacles for the SBR as yet, as this is a National Heritage Wilderness Area and a World Heritage Site. Hence addressing threats are a priority. However, sharing of knowledge and obtaining advice on how development can be permitted for the wellbeing of local people without jeopardizing the conservation function of the biodiversity rich CZ is extremely important. It is hoped that the secretariat can promote exchange of ideas, through online fora, exchange visits and study tours, and provide technical assistance where relevant.
- Advice and case studies on new technologies to plan infrastructure and other development in BZ without compromising the integrity of the CZ or degrading the environment is essential.
- Overall assistance to strengthen the capacity of biosphere reserve managers by twinning arrangements and exchange programmes which the secretariat could organize.
- An award for the best projects in the world network of BRs for integration of conservation and sustainable development that has influenced national/regional planning could be established.
- Exchange programmes to relevant project sites that have successfully addressed problems in local BRs will greatly help position biosphere reserves more positively among Protected Area Managers, and motivate biosphere reserve managers, administrators and policy makers at the national level to follow the concepts that the MAB Programme is promoting worldwide.

Main objectives of the Biosphere Reserve:

Describe the main objectives of the biosphere reserve integrating the three functions and the sustainable development objectives for the coming years.

Objectives:

7. The composition, structure, functions and evolutionary potential of biodiversity is conserved.
8. Regulatory ecosystem services provided
9. Livelihood of Sinharaja buffer zone communities improved (needs to be changed to TZ)
10. Recreational capacity of the Sinharaja forest maintained and enhanced
11. Educational and Research opportunities provided
6. Institutional structure and legal framework for management of the Sinharaja forests is established. (It was agreed that the above vision, goals and objectives applied to the Sinharaja Biosphere Reserve¹³ would be applied with a change in objective 6 to: Institutional structure and legal framework as required for management of the SBR's CZ, BZ and TZ are strengthened).

9. SUPPORTING DOCUMENTS

[List of the annexes submitted with periodic review report.]

(1) Updated location and zonation map with coordinates

[Provide the biosphere reserve's standard geographical coordinates (all projected under WGS 84). Provide a map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve (Map(s) shall be provided in both paper and electronic copies). Shapefiles (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form. If applicable, also provide a link to access this map on the internet (e.g. Google map, website...)]

(2) Updated vegetation map or land cover map

[A vegetation map or land cover map showing the principal habitats and land cover types of the biosphere reserve should be provided, if available.]

(3) Updated list of legal documents (if possible with English, French or Spanish synthesis of its contents and a translation of its most relevant provisions)

[If applicable update the principal legal documents since the nomination of the biosphere reserve and provide a copy of these documents.]

(4) Updated list of land use and management/cooperation plans

[List existing land use and management/cooperation plans (with dates and reference numbers) for the administrative area(s) included within the biosphere reserve. Provide a copy of these documents. It is recommended to produce an English, French or Spanish synthesis of its contents and a translation of its most relevant provisions.]

(5) Updated species list (to be annexed)

[Provide a list of important species occurring within the proposed biosphere reserve, including common names, wherever possible.]

(6) Updated list of main bibliographic references (to be annexed)

[Provide a list of the main publications and articles of relevance to the proposed biosphere reserve.]

(7) Further supporting documents.

10. ADDRESSES

10.1 Contact address of the proposed biosphere reserve:

[Government agency, organization, or other entity (entities) to serve as the main contact to whom all correspondence within the World Network of Biosphere Reserves should be addressed.]

Name: Forest Department

Street or P.O. Box: Rajamalwatte Road

City with postal code: Bataramulla

Country: Sri Lanka

Telephone: 94+ 0112 866616

e-mail: anura.sathurusinghe@gmail.com

Web site: For the Forest Department Sri Lanka

http://www.forestdept.gov.lk/web/index.php?option=com_content&view=article&id=109:forest-department-new-website&catid=43:news-a-events&Itemid=128&lang=en

0.2. Administering entity of the core area(s): Same as above

Name: Forest Department

Street or P.O. Box: Rajamalwatte Road

City with postal code: Bataramulla

Country: Sri Lanka

Telephone: 94+ 0112 866616

e-mail: anura.sathurusinghe@gmail.com

Web site: For the Forest Department Sri Lanka

http://www.forestdept.gov.lk/web/index.php?option=com_content&view=article&id=109:forest-department-new-website&catid=43:news-a-events&Itemid=128&lang=en

20.3. Administering entity of the buffer zone(s): Same as above (same as for the CZ)

Name:

Street or P.O. Box: _____

City with postal code: _____

Country: _____

Telephone: _____

E-mail: _____

Web site: _____

20.4. Administering entity of the transition area(s): Same as above (same as for the CZ)

Name:

Street or P.O. Box: _____

City with postal code: _____

Country: _____

Telephone: _____

E-mail: _____

Web site: _____

Annex I to the Biosphere Reserve Periodic Review, January 2013
MABnet Directory of Biosphere Reserves

Administrative details

Country: Sri Lanka

Name of BR: Sinharaja Biosphere Reserve

Year designated: 1978

Administrative authorities: (7.6) Forest Department

Name Contact: (10.1) Mr Anura Sathurusinghe, Conservator General of Forests,

Contact address: (Including phone number, postal and email addresses) (10.1)
 Forest Department, Sampathpaya, No, 82, Rajamalwatte Road, Battaramulla, Sri Lanka.
 +94 011 2866616

Related links: (web sites)

http://www.forestdept.gov.lk/web/index.php?option=com_content&view=article&id=114&Itemid=116&lang=en (this site is for the Sinharaja World Heritage site which mentions that it is also part of a Biosphere Reserve).

Social networks: (6.5.4) - NONE

Description

General description:

Approximately 25 lines

The Sinharaja Biosphere Reserve (SBR) located in Sri Lanka was designated as a BR by UNESCO in 1978. It covers 29,830 ha, has a mosaic of ecosystems ranging from lowland (mainly) to sub-montane rainforests, tea plantations and homesteads, and is managed by the Forest Department of Sri Lanka. Due to the island's geo-evolutionary history, the Core Zone of the SBR, the Sinharaja National Heritage Wilderness Area, has elements of Gondwana origin among its species, and is a remnant of the now fragmented far-eastern group of rainforests of South and Southeast Asia. It is currently acknowledged as the largest and most biologically significant area of relatively undisturbed lowland tropical humid forest in Sri Lanka and is a repository of exceptionally high levels of biodiversity and endemism, with several instances of point endemism. With over 331 species of flowering plants and 359 species of vertebrates, its exceptional endemism is demonstrated by the fact that over 50% its flora and 43% of its vertebrate fauna are endemic. For example, 90% of the dipterocarp species that dominate the tall canopy are endemics. These features of high biodiversity value were recognized by its inscription as a World Heritage Site by UNESCO in 1988. The forest is also the site of varied research activities conducted by several universities and other agencies ranging from species and ecosystem related work to sociological research in the reserve's Buffer and Transition Zones. The reserve also conducts many educational programmes for school children and other visitor groups on a continual basis through its Conservation Centres at Kudawa and Pitadeniya, which together a Bungalow at Morningside offer visitor accommodation for about 137 persons. Its Buffer Zone is dominated by forests with almost equal biodiversity value as the Core Zone. The economy in the Transition Zone is dominated by tea cultivation ranging from large plantations to small holdings cultivated by local people. Recent work by the Forest Department has helped enlist the participation of local people to conserve this unique ecosystem, and provided the first model in Sri Lanka for community participation in forest conservation by local people who are not dependant on forests for their sustenance. Though people do continue to obtain forest resources, it is mainly for small scale subsistence use or sale. Despite considerable socio-economic advancement, the villagers living around Sinharaja have preserved their cultural values, making the Sinharaja BR an ideal place for the serious ecotourist in search of both nature and culture. A large number of local and foreign visitors visit the Sinharaja Biosphere Reserve annually to view its many attractions, including a rich bird life, lush forests with giant trees, and many splendid waterfalls such as the *Duvili ella* and *Brahmana ella*.

Major ecosystem type: Lowland tropical rainforest

Major habitats & land cover types: Primary and secondary lowland rainforest, sub-montane rainforest, forest plantations, homesteads and tea

Bioclimatic zone: Lowland wet zone of Sri Lanka

Location (latitude & longitude):

Cardinal points:	Latitude	Longitude
Most central point:	06 23 39	80 28 33
Northernmost point:	06 30 00	80 19 53
Southernmost point:	06 19 28	80 27 04
Westernmost point:	06 26 12	80 18 30
Easternmost point:	06 22 33	80 39 56

Data: Edirisinghe and Chandani (2013) from the Forest Department GIS unit

Total Area (ha): 29,830 ha

Core area(s): 11,427 ha.

Buffer zone(s): 16,316 ha

Transition area(s) : 2,087 ha

Different existing zonation: Previously (2003 review) there was only the CZ and Buffer zone. The latter included the villages. The Buffer zone has been increased and a Transition Zone has been newly defined as per the ICC recommendations.

Altitudinal range (metres above sea level): 200 - 1385 feet

Zonation map(s) (refer to section 2.2.2):

See Annex 2 for zonation maps

Main objectives of the biosphere reserve

Brief description

Approximately 5 lines

Conservation of the composition, structure, functions and evolutionary potential of biodiversity in the Core Zone, ensure that the reserve provides regulatory ecosystem services, improvement of the livelihood of Sinharaja buffer zone communities through sustainable development, recreational capacity of the Sinharaja forest maintained and enhanced, educational and research opportunities are provided, and institutional structure and legal framework as required for management of the Sinharaja BR's CZ, BZ and TZ are strengthened.

Research

Brief description

Approximately 5 lines

The Sinharaja Biosphere Reserve has been used for research and capacity building since 2003. Projects involve both basic and applied science and social science research by several universities, state agencies and NGOs covering: invertebrates, amphibians, reptiles, birds, mammals (primates), plants, taxonomy, fungi, carbon fixation and biomass production, conservation and threatened species, economically important species, bio-prospecting, invasive species, and social/socio-economic aspects. Research under the sponsorship of the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI) is continuing as part of a global long-term forest research programme.

Monitoring

Brief description

Approximately 5 lines

Monitoring and research at the SBR includes the internationally acknowledged long-term studies on the diversity and functioning of the forest monitored through a global network of forest research plots, under the sponsorship of the Centre for Tropical Forest Science (CTFS) of the Smithsonian Tropical Research Institute (STRI). In addition, monitoring of plant biodiversity has been carried out at national level in 2007 as a follow-up of the National Conservation Review biodiversity assessment in the mid 1990s to assess the impacts on conservation after the GEF funded South West Participatory Project which ended in 2007.

Specific variables (fill in the table below and tick the relevant parameters)

Abiotic		Biodiversity	
Abiotic factors		Afforestation/Reforestation	
Acidic deposition/Atmospheric factors		Algae	
Air quality		Alien and/or invasive species	
Air temperature		Amphibians	x
Climate, climatology	x	Arid and semi-arid systems	
Contaminants		Autoecology	
Drought		Beach/soft bottom systems	
Erosion		Benthos	
Geology		Biodiversity aspects	x
Geomorphology		Biogeography	
Geophysics		Biology	x
Glaciology		Biotechnology	
Global change		Birds	x
Groundwater		Boreal forest systems	
Habitat issues		Breeding	
Heavy metals		Coastal/marine systems	
Hydrology		Community studies	
Indicators		Conservation	x
Meteorology		Coral reefs	
Modeling		Degraded areas	
Monitoring/methodologies		Desertification	
Nutrients		Dune systems	
Physical oceanography		Ecology	x
Pollution, pollutants		Ecosystem assessment	
Siltation/sedimentation		Ecosystem functioning/structure	
Soil	x	Ecosystem services	
Speleology		Ecotones	
Topography		Endemic species	
Toxicology		Ethology	
UV radiation		Evapotranspiration	
		Evolutionary studies/Palaeoecology	
		Fauna	
		Fires/fire ecology	
		Fishes	
		Flora	x
		Forest systems	
		Freshwater systems	
		Fungi	x
		Genetic resources	
		Genetically modified organisms	
		Home gardens	
		Indicators	
		Invertebrates	x
		Island systems/studies	
		Lagoon systems	
		Lichens	
		Mammals	x
		Mangrove systems	
		Mediterranean type systems	
		Microorganisms	
		Migrating populations	

		Modeling	
		Monitoring/methodologies	
		Mountain and highland systems	
		Natural and other resources	
		Natural medicinal products	
		Perturbations and resilience	
		Pests/Diseases	
		Phenology	
		Phytosociology/Succession	
		Plankton	
		Plants	x
		Polar systems	
		Pollination	
		Population genetics/dynamics	
		Productivity	
		Rare/Endangered species	
		Reptiles	x
		Restoration/Rehabilitation	
		Species (re) introduction	
		Species inventorying	
		Sub-tropical and temperate rainforest	
		Taxonomy	x
		Temperate forest systems	
		Temperate grassland systems	
		Tropical dry forest systems	
		Tropical grassland and savannah systems	
		Tropical humid forest systems	
		Tundra systems	
		Vegetation studies	
		Volcanic/Geothermal systems	
		Wetland systems	
		Wildlife	

		Integrated monitoring	
Agriculture/Other production systems		Biogeochemical studies	
Agroforestry		Carrying capacity	
Anthropological studies		Climate change	
Aquaculture		Conflict analysis/resolution	
Archaeology		Ecosystem approach	
Bioprospecting	x	Education and public awareness	
Capacity building		Environmental changes	
Cottage (home-based) industry		Geographic Information System (GIS)	
Cultural aspects		Impact and risk studies	
Demography		Indicators	
Economic studies		Indicators of environmental quality	
Economically important species	x	Infrastructure development	
Energy production systems		Institutional and legal aspects	
Ethnology/traditional practices/knowledge		Integrated studies	
Firewood cutting		Interdisciplinary studies	
Fishery		Land tenure	
Forestry		Land use/Land cover	
Human health		Landscape inventorying/monitoring	

Human migration		Management issues	
Hunting		Mapping	
Indicators		Modeling	
Indicators of sustainability		Monitoring/methodologies	
Indigenous people's issues		Planning and zoning measures	
Industry		Policy issues	
Livelihood measures		Remote sensing	
Livestock and related impacts		Rural systems	
Local participation		Sustainable development/use	
Micro-credits		Transboundary issues/measures	
Mining		Urban systems	
Modeling		Watershed studies/monitoring	
Monitoring/methodologies			
Natural hazards			
Non-timber forest products			
Pastoralism			
People-Nature relations			
Poverty			
Quality economies/marketing			
Recreation			
Resource use			
Role of women			
Sacred sites			
Small business initiatives			
Social/Socio-economic aspects	x		
Stakeholders' interests			
Tourism			
Transports			

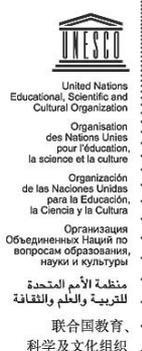
List of Annexes to the Periodic Review report for the Sinharaja Biosphere Reserve

- Annex 1: Names of people consulted with dates of consultation
 Annex 2: Maps (zonal and topography)
 Annex 3: Maps Land use
 Annex 4: The list of research activities carried out in the IBR since 2003
 Annex 5a: List of flora species subjected to phenological sampling at the Sinharaja NHWA
 Annex 5b: List of flowering plants in the SBR emanating from the Expert's Workshop
 Annex 6: List of faunal species in the SBR
 Annex 7: List of promotional material sent
 Annex 8: List of indicators used
 Annex 9: List of references and research papers since 2003 from studies in the SBR.

<p>Annex II to the Biosphere Reserve Periodic Review, January 2013</p> <p>Promotion and Communication Materials</p> <p>for the biosphere reserve</p>

Provide some promotional material regarding the site, notably high quality photos, and/or short videos on the site so as to allow the Secretariat to prepare appropriate files for press events. To this end, a selection of photographs in high resolution (300 dpi), with photo credits

and captions and video footage (rushes), without any comments or sub-titles, of professional quality – DV CAM or BETA only, will be needed.



In addition, return a signed copy of the following Agreements on Non-Exclusive Rights for photo(s) and video(s).

UNESCO Photo Library

Bureau of Public Information

AGREEMENT GRANTING NON-EXCLUSIVE RIGHTS

Reference:

1. a) I the undersigned, copyright-holder of the above mentioned photo(s) hereby grant to UNESCO free of charge the non-exclusive right to exploit, publish, reproduce, diffuse, communicate to the public in any form and on any support, including digital, all or part of the photograph(s) and to licence these rights to third parties on the basis of the rights herein vested in UNESCO

b) These rights are granted to UNESCO for the legal term of copyright throughout the world.

c) The name of the photographer will be cited alongside UNESCO's whenever his/her work is used in any form.

2. I certify that:

a) I am the sole copyright holder of the photo(s) and am the owner of the rights granted by virtue of this agreement and other rights conferred to me by national legislation and pertinent international conventions on copyright and that I have full rights to enter into this agreement.

b) The photo(s) is/are in no way whatever a violation or an infringement of any existing copyright or licence, and contain(s) nothing obscene, libellous or defamatory.

Name and Address:

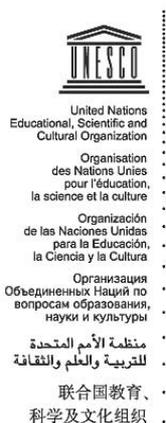
Signature :

Date :

(Sign, return to UNESCO two copies of the Agreement and retain the original for yourself)

Mailing address: 7 Place Fontenoy, 75352 Paris 07 SP, Direct Telephone: 00331 – 45681687

Direct Fax: 00331 – 45685655; e-mail: photobank@unesco.org; m.ravassard@unesco.org



UNESCO PHOTO LIBRARY

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AGREEMENT GRANTING NON-EXCLUSIVE RIGHTS

Reference:

1. a) I the undersigned, copyright-holder of the above mentioned video(s) hereby grant to UNESCO free of charge the non-exclusive right to exploit, publish, reproduce, diffuse, communicate to the public in any form and on any support, including digital, all or part of the photograph(s) and to licence these rights to third parties on the basis of the rights herein vested in UNESCO
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 - c) The name of the author/copyright holder will be cited alongside UNESCO's whenever his/her work is used in any form.

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 - a) I am the sole copyright holder of the video(s) and am the owner of the rights granted by virtue of this agreement and other rights conferred to me by national legislation and pertinent international conventions on copyright and that I have full rights to enter into this agreement.
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Annex III to the Biosphere Reserve Periodic Review, January 2013
The Statutory Framework of the World Network of Biosphere Reserves

Introduction

Within UNESCO's Man and the Biosphere (MAB) programme, biosphere reserves are established to promote and demonstrate a balanced relationship between humans and the biosphere. Biosphere reserves are designated by the International Co-ordinating Council of the MAB Programme, at the request of the State concerned. Biosphere reserves, each of which remains under the sole sovereignty of the State where it is situated and thereby submitted to State legislation only, form a World Network in which participation by the States is voluntary.

The present Statutory Framework of the World Network of Biosphere Reserves has been formulated with the objectives of enhancing the effectiveness of individual biosphere reserves and strengthening common understanding, communication and co-operation at regional and international levels.

This Statutory Framework is intended to contribute to the widespread recognition of biosphere reserves and to encourage and promote good working examples. The delisting procedure foreseen should be considered as an exception to this basically positive approach, and should be applied only after careful examination, paying due respect to the cultural and socio-economic situation of the country, and after consulting the government concerned.

The text provides for the designation, support and promotion of biosphere reserves, while taking account of the diversity of national and local situations. States are encouraged to elaborate and implement national criteria for biosphere reserves which take into account the special conditions of the State concerned.

Article 1 - Definition

Biosphere reserves are areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognized within the framework of UNESCO's programme on Man and the Biosphere (MAB), in accordance with the present Statutory Framework.

Article 2 - World Network of Biosphere Reserves

1. Biosphere reserves form a worldwide network, known as the World Network of Biosphere Reserves, hereafter called the Network.
2. The Network constitutes a tool for the conservation of biological diversity and the sustainable use of its components, thus contributing to the objectives of the Convention on Biological Diversity and other pertinent conventions and instruments.
3. Individual biosphere reserves remain under the sovereign jurisdiction of the States where they are situated. Under the present Statutory Framework, States take the measures which they deem necessary according to their national legislation.

Article 3 - Functions

In combining the three functions below, biosphere reserves should strive to be sites of excellence to explore and demonstrate approaches to conservation and sustainable development on a regional scale:

- (i) conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation;
- (ii) development - foster economic and human development which is socio-culturally and ecologically sustainable;
- (iii) logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development.

Article 4 - Criteria

General criteria for an area to be qualified for designation as a biosphere reserve:

1. It should encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions.
2. It should be of significance for biological diversity conservation.
3. It should provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale.
4. It should have an appropriate size to serve the three functions of biosphere reserves, as set out in Article 3.
5. It should include these functions, through appropriate zonation, recognizing:
 - (a) a legally constituted core area or areas devoted to long-term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives;
 - (b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place;
 - (c) an outer transition area where sustainable resource management practices are promoted and developed.
6. Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and carrying out the functions of a biosphere reserve.
7. In addition, provisions should be made for:
 - (a) mechanisms to manage human use and activities in the buffer zone or zones;
 - (b) a management policy or plan for the area as a biosphere reserve;

- (c) a designated authority or mechanism to implement this policy or plan;
- (d) programmes for research, monitoring, education and training.

Article 5 - Designation procedure

1. Biosphere reserves are designated for inclusion in the Network by the International Co-ordinating Council (ICC) of the MAB programme in accordance with the following procedure:

(a) States, through National MAB Committees where appropriate, forward nominations with supporting documentation to the secretariat after having reviewed potential sites, taking into account the criteria as defined in Article 4;

(b) the secretariat verifies the content and supporting documentation: in the case of incomplete nomination, the secretariat requests the missing information from the nominating State;

(c) nominations will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC;

(d) ICC of the MAB programme takes a decision on nominations for designation. The Director-General of UNESCO notifies the State concerned of the decision of ICC.

2. States are encouraged to examine and improve the adequacy of any existing biosphere reserve, and to propose extension as appropriate, to enable it to function fully within the Network. Proposals for extension follow the same procedure as described above for new designations.

3. Biosphere reserves which have been designated before the adoption of the present Statutory Framework are considered to be already part of the Network. The provisions of the Statutory Framework therefore apply to them.

Article 6 - Publicity

1. The designation of an area as a biosphere reserve should be given appropriate publicity by the State and authorities concerned, including commemorative plaques and dissemination of information material.

2. Biosphere reserves within the Network, as well as the objectives, should be given appropriate and continuing promotion.

Article 7 - Participation in the Network

1. States participate in or facilitate co-operative activities of the Network, including scientific research and monitoring, at the global, regional and sub-regional levels.

2. The appropriate authorities should make available the results of research, associated publications and other data, taking into account intellectual property rights, in order to ensure the proper functioning of the Network and maximize the benefits from information exchanges.

3. States and appropriate authorities should promote environmental education and training, as well as the development of human resources, in co-operation with other biosphere reserves in the Network.

Article 8 - Regional and thematic subnetworks

States should encourage the constitution and co-operative operation of regional and/or thematic subnetworks of biosphere reserves, and promote development of information exchanges, including electronic information, within the framework of these subnetworks.

Article 9 - Periodic review

1. The status of each biosphere reserve should be subject to a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4, and forwarded to the secretariat by the State concerned.

2. The report will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC.

3. ICC will examine the periodic reports from States concerned.

4. If ICC considers that the status or management of the biosphere reserve is satisfactory, or has improved since designation or the last review, this will be formally recognized by ICC.

5. If ICC considers that the biosphere reserve no longer satisfies the criteria contained in Article 4, it may recommend that the State concerned take measures to ensure conformity with the provisions of Article 4, taking into account the cultural and socio-economic context of the State concerned. ICC indicates to the secretariat actions that it should take to assist the State concerned in the implementation of such measures.

6. Should ICC find that the biosphere reserve in question still does not satisfy the criteria contained in Article 4, within a reasonable period, the area will no longer be referred to as a biosphere reserve which is part of the Network.

7. The Director-General of UNESCO notifies the State concerned of the decision of ICC.

8. Should a State wish to remove a biosphere reserve under its jurisdiction from the Network, it notifies the secretariat. This notification shall be transmitted to ICC for information. The area will then no longer be referred to as a biosphere reserve which is part of the Network.

Article 10 - Secretariat

1. UNESCO shall act as the secretariat of the Network and be responsible for its functioning and promotion. The secretariat shall facilitate communication and interaction among individual biosphere reserves and among experts. UNESCO shall also develop and maintain a worldwide accessible information system on biosphere reserves, to be linked to other relevant initiatives.

2. In order to reinforce individual biosphere reserves and the functioning of the Network and sub-networks, UNESCO shall seek financial support from bilateral and multilateral sources.
3. The list of biosphere reserves forming part of the Network, their objectives and descriptive details, shall be updated, published and distributed by the secretariat periodically.