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 fulfils 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:

   UNESCO  
   Division of Ecological and Earth Sciences  
   1, rue Miollis  
   F-75732 Paris Cedex 15, France  
   Tel: +33 (0)1 45 68 40 67  
   Fax: +33 (0)1 45 68 58 04  
   E-mail: mab@unesco.org  
   www.unesco.org/mab
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PART I: SUMMARY

a) Name of the biosphere reserve: **West Estonian Archipelago Biosphere Reserve**

b) Country: **Estonia**

c) Year of designation: **1990**

d) Year(s) of periodic review(s): **2005**

e) Previous recommendation(s) made by the International Co-ordinating Council (MAB-ICC), if applicable:

   1. To submit a biosphere reserve nomination form with the revised zonation, notably of the core area, and including the additional island;

   2. To share the experience of the institutional history of this biosphere reserve with other biosphere reserves, for example at the EuroMAB meeting in Austria in October 2005.

f) What follow-up actions are completed and if not completed/initiated, please provide justifications.

   1. The biosphere area has been zonated as required into core areas, buffer zones and transition areas. The map of zonations has been set forth in annex 1. In addition, a proposal has been made to add Kihnu and Manija islands (the Kihnu cultural space), which are under UNESCO protection, to the BPA. Kihnu and Manija islands are part of UNESCO Intangible Cultural Heritage sites (the Kihnu cultural space), therefore these islands have not been included in BPA.

   2. Estonia took part in the 25th session of UNESCO MAB ICC in 2012. In addition, Estonia took part in the EuroMAB in 2013, and in 2015 it was the organizer of the EuroMAB.

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

The West Estonian Archipelago BPA has five strategic objectives: BPA has become a pilot area for a sustainable economy and use of the natural environment and natural resources, biodiversity has been preserved, the BPA has preserved and showcased the islands’ cultural heritage, BPA is a research, monitoring and training centre that supports the green economy and active cooperation in achieving the objectives of the BPA.

A very important part of achieving the goals is the supplementation of the Sustainable Development Act with the concept of BPA and, in 2014, the approval of the Sustainable Development Programme for West Estonian Archipelago Biosphere Programme Area 2014-2020” The programme and action plan are a basis for implementation of the objectives of the BPA.
Table 1 sets forth measures employed in the last 10 years for achieving the objectives of BPA by each sector.

Table 1. Measures based on BPA function.

<table>
<thead>
<tr>
<th>Function</th>
<th>Implementations</th>
</tr>
</thead>
</table>
| Conservation function     | • The number of nature reserves and their total area has increased.  
• Conservation management plans have been approved for many areas.  
• The valuable ecosystems and semi-natural communities of the BPA are being restored to an increasing extent.  
• Various nature conservation projects are carried out on the BPA, including studies with assistance from various funding agencies (e.g. Environment Programme and LIFE+). |
| Development function      | • Enterprise is supported in the framework of various programmes and projects (such as Interreg Baltic Sea Region)  
• More and more attention is paid to preserving heritage culture, carrying out projects that investigate heritage culture and organizing events that introduce it.  
• Aspects that ensure well-being in society are developed; for example well-being of the older population was improved in the framework of the VIRTU project. |
| Logistic function         | • State monitoring is carried out in several sectors in BPA. In addition, Saaremaa is a research area for the University of Tartu Macroecology working group.  
• Environmental education has developed significantly. New environmental education centres have been opened and visitor infrastructure has been developed. Environmental education events and materials are organized in the framework of various projects.  
• More and more cooperation takes place with leading Estonian universities as well as at the international level.  
• Making BPA information available on the Environmental Board website and starting a newsletter. |

h) Briefly describe the process by which the current periodic review has been conducted:

This report was prepared by specialists from Consultare OÜ and the Environmental Board. Preparation of the report encompassed the following stages:
Gathering information from local governments, the Internet and professional literature;

Working meeting between Consultare OÜ and the Environmental Board in which the methodology for preparing the report was introduced and the major topics were discussed;

Gathering information from the Environmental Board;

Preparing an overview of major studies, projects, monitoring and events related to the BPA during the last ten years;

Querying different databases and agencies related to BPA work (such as the Environmental Agency (EELIS database), Environmental Information Centre, State Forest Management Centre);

Consolidating report materials, preparing illustrative and map material;

Reviewing and supplementing the report on the part of the Environmental Board;

Introducing the report to local government associations and inserting additions and changes;

Approval of the report by the director general of the Environmental Board.

i) Area and spatial configuration:

Compared to 2005, the core area (land plus marine areas) has increased by 172.32 km$^2$. The predominant part of the increase is made up by expansion of the existing protected areas and creation of and strict nature reserves and special management zones not under management. In addition new protected areas have been formed. For instance, the following areas have been established or expanded; in Saaremaa, Koigi landscape protection area, Haavassoo nature reserve, Säärenõmme nature reserve, Kübassaare landscape protection area, Rahuste nature reserve; and on Hiiumaa, Tareste landscape protection area, Paope nature reserve, Käinalahe-Kassari landscape protection area, Pihla-Kaibaldi nature reserve, Kõpu nature reserve and the Hiiumaa small islands’ nature reserve.

As of 2015, the buffer zone has increased by 94.09 km$^2$; the change is predominantly due to the establishment of new protected areas (including managed special conservation zones and species protection sites). In addition, changes in the determination of boundaries of special conservation areas have occurred (such as the Väinameri special conservation area). Compared to 2015, the transition area decreased by 265.31 km$^2$; the change is due to expansion of protected areas and the formation of new protected areas.

Table 2. Land area in each zone.

<table>
<thead>
<tr>
<th>Area of terrestrial Core Area(s)</th>
<th>Previous report (nomination form or periodic review) and date (km$^2$)*</th>
<th>Proposed changes (if any) (km$^2$)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of terrestrial Buffer Zone(s)</td>
<td>135.97</td>
<td>259.56</td>
</tr>
<tr>
<td>Area of terrestrial Transition Area(s)</td>
<td>660.37</td>
<td>548.73</td>
</tr>
<tr>
<td>Area of marine Core Area(s)</td>
<td>3277.31</td>
<td>3265.17</td>
</tr>
</tbody>
</table>

* Previous report (nomination form or periodic review) and date (km$^2$)

** Proposed changes (if any) (km$^2$)
Area of marine Buffer Zone(s)  3864.14  4069.87
Size of marine Transition Area(s)  7193.04  6939.87

* - Areas of zones were not provided in the previous report. The areas given were calculated on the basis of map material submitted by the Environmental Board in 2005.

** - In Estonia, the areas of zones are related to protection procedure, as a result of which the areas of zones in table 2 are provided as of 2015.

j) Human population of the biosphere reserve:

The exact population in each zone of the BPA is unknown. The populations provided in Table 3 are estimates. The estimates were compiled based on available population data for the villages and the number of households in each zone according to number of rooms, multiplied by the average household size in the respective county (Saare and Hiiu) or municipality (Vormsi rural municipality). The number of inhabitants in the transition area was derived by subtracting the number of residents in the core area and buffer zones from the number of inhabitants of the BPA (data from 2015 Statistics Estonia database for Saare and Hiiu counties and Vormsi).

Table 3. Approximate number of inhabitants in various zones.

<table>
<thead>
<tr>
<th>Area Type</th>
<th>Previous report (nomination form or periodic review) and date</th>
<th>At present (please state date of census or other source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Area(s) (permanent and seasonally)</td>
<td>Populations for zones were not provided in the previous report. The total population of the BPA as of 2003 is given – which is 35,665 for Saare County (including 1,853 for Muhu Island and 65 for Ruhnu Island), 10,367 for Hiiu County and 247 for Vormsi. The total population of the two cities, Kuressaare and Kärdla, is 18,700.</td>
<td>An estimated 15 permanent residents. Estimated 920 permanent inhabitants, including 20 on Vormsi, 400 in Saare County and 500 in Hiiu County.</td>
</tr>
<tr>
<td>Buffer Zone(s) (permanent and seasonally)</td>
<td></td>
<td>Estimated 39,630 permanent inhabitants, including 255 on Vormsi, 8,074 in Hiiu County and 31,301 in Saare County.</td>
</tr>
<tr>
<td>Transition Area(s) (permanent and seasonally)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>State money</td>
<td>343 200</td>
</tr>
<tr>
<td>Employee payroll</td>
<td></td>
</tr>
<tr>
<td>Office, travel</td>
<td>19 800</td>
</tr>
<tr>
<td>National monitoring</td>
<td>4 950 000</td>
</tr>
<tr>
<td>Studies</td>
<td>200 000</td>
</tr>
<tr>
<td>State Forest Management Centre</td>
<td>Restoration seminatural communities</td>
</tr>
<tr>
<td>Visitor management activities</td>
<td>2 332 200</td>
</tr>
<tr>
<td>ARIB Grant</td>
<td>Restoration seminatural communities</td>
</tr>
<tr>
<td>Maintenance of seminatural communities</td>
<td>17 255 338</td>
</tr>
<tr>
<td>Environmental Investments Centre</td>
<td>Projects for sustainable development</td>
</tr>
<tr>
<td>Grant</td>
<td>Marine habitat studies</td>
</tr>
<tr>
<td>European Mink studies</td>
<td>Species protection</td>
</tr>
<tr>
<td>LIFE +</td>
<td></td>
</tr>
<tr>
<td>Interreg</td>
<td></td>
</tr>
</tbody>
</table>

1) International, regional, multilateral or bilateral framework of cooperation. Describe, where applicable, the contribution of the biosphere reserve to achieve objectives and developing mechanisms that contribute to the implementation of international or regional bilateral or multilateral agreements, conventions, etc.

The BPA specialist performs international cooperation with multiple partners. From the standpoint of the MAB programme, one of the most important cooperation partners is the EuroMAB regional network, which covers Europe and North America. Estonia has taken part in EuroMAB conferences and has also been a conference organizer. In addition, Estonia engages in cooperation with NordMAB, which is a network of BPAs in the Nordics. The closest cooperation has taken place with Finland’s Archipelago Sea biosphere reserve. Saaremaa and Hiiumaa are part of the B7 Baltic Sea islands cooperation network, the goal of which is to contribute through international cooperation to the development of the member islands and achievement of their objectives. Since 2004, Estonia has been a member of the European Union, which has led to many cooperation opportunities, with participation in many different EU-initiated programmes (such as Interreg Baltic Sea Region and LIFE+), due to which it has gained funding and opportunities for carrying out many activities in the BPA. In 2005-2007, there was close cooperation with several German biosphere reserves in Rügen and Schleswig-Holstein.

At the local level, BPA also has many partners. Cooperation takes place with UNESCO Estonian National Committee, several government institutions, the local governments and associations of local governments in the BPA, civic organizations and non-profits, including business advocacy organizations and LEADER activity groups, as well as representatives of higher education institutions and vocational schools. All of these partners are very important as the BPA programme approved in 2014 is implemented in cooperation with them.
PART II: PERIODIC REVIEW REPORT

1. BIOSPHERE RESERVE:

1.1 Year designated: 1990.

1.2 Year of first periodic review and of any following periodic review(s) (when appropriate): First periodic review was done in 2005.

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.

The biosphere programme area is zoned as required. The core areas are made up of strict nature reserves and special conservation zones, buffer zones consist of limited management zones, special conservation areas and species protection sites, and the transition area is made up of the biosphere land and water area outside the core and buffer zones.\(^1\) In addition, a proposal has been made to add Kihnu and Manija islands (the Kihnu cultural space), which are under UNESCO protection, to the BPA. Kihnu and Manija islands are part of UNESCO Intangible Cultural Heritage sites (the Kihnu cultural space), therefore these islands have not been included in BPA.

UNESCO Estonian National Committee advisory board member Toomas Kokovkin took part in the 25th session of UNESCO MAB ICC. Kokovkin also organized the 3rd Meeting of the World Network of Island and Coastal Biosphere Reserves, which took place in 2013 on Saaremaa and Hiiumaa. In addition, Estonia has taken part in the EuroMAB in 2013 and in 2015 it was the organizer of the EuroMAB conference in Haapsalu.

1.4 Other observations or comments on the above.

None.

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

1.5.1 Which stakeholders were involved?

The preparation of the report involved the most important stakeholders related to the BPA, such as regional local governments and local government associations, LEADER action groups (Saarte Koostöökogu, Hiidlase Koostöökogu), civic associations and non-profits and institutions of higher education and vocational education. Information was also received from various government institutions (such as the Environmental Agency) and their databases. Interaction with the most of these stakeholders took place in the framework of the preparation of the BPA programme in 2012, when public work and involvement meetings took place on Vormsi and Saare and Hiiu counties.

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

The information gathered in the framework of the preparation of the BPA programme was used to prepare this report. Public meetings and work seminars were organized in the preparation of the programme, in which the most important stakeholders related to the BPA took part. In addition, websites, overviews and reports developed by a number of stakeholders were used to prepare the report, for example, local governments’ websites and Hiiumaa economic surveys. Information was exchanged with the Environmental Board, which commissioned the work, at working meetings and via e-mail.

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

Five major meetings and two seminars were held in the process of conducting this review.

- In 2012, three public meetings were held in the framework of the preparation of the BPA programme;
- In 2012, two seminars were held in the framework of the preparation of the BPA programme;
- In 2015, there was a Hiiu, Lääne and Saare County environmental education roundtable;
- In 2015, there were meetings related to renewal of the certificate and preparation of the report.

1.5.4 Were they well attended, with full and balanced representation?

(Describe participation and stakeholders).

Representatives of all of the major stakeholders related to the programme took part in public meetings on the BPA programme and action plan, and there were equal numbers of men and women at two of the three meetings. The representatives of all of the most important stakeholders were represented at the BPA programme seminar as well, but the second seminar had even better attendance, and also had a more even share of men and women.

At the Hiiu, Lääne and Saare county environmental education roundtable in 2014, people closely connected to environmental education and the BPA took part. There were four times more women than men at the meeting (16 women).

At the 2015 meeting on renewal of certificate and preparation of the review, Consultare OÜ specialists (the report compilers) the Environmental Board’s Hiiu-Lääne-Saare region director and the BPA Council chairman took part.

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 the economy**

Over the decade, Saaremaa became one of Estonia’s most active regions for private enterprise. The number of companies has also grown on Hiiumaa and Vormsi over the course of the
decade. Emigration can be listed as one of the most important problems, due to this the number of employees in every sector has decreased. It has remained stable only in the recreational craft building sector.

The biggest changes have taken place in agriculture – pig farming ended in Hiiumaa and dairy farming has halved, with meat farming increasing by a comparable amount. In both Hiiu and Saare county, the number of farming households has dropped significantly, including the number of employees. In forestry, the volumes of timber felled have risen consistently, but demand for paperwood has dropped in connection with the establishment of South American paper industries with greater cost effectiveness and economy of scale. There has been positive development in the fishery sector as well, where the wages of employees have risen most in connection with a drop in fishing quotas and greater demand for fish from fur farms.

Tourism has also developed in a positive direction, and it is constantly furthered in the BPA constantly through various programmes and projects. As this is a popular travel destination, development of the county as a tourism region will significantly increase its value as a living environment as well. The number of accommodation providers in the area has increased, but tourism is still seasonal – the majority of tourists visit the BPA in the period from June to August.

- **Important changes in land use**

Table 4 sets out changes in land use by administrative unit. The amount of profit-yielding land in Hiiumaa has increased by close to 10,000 ha and the amount of protected land by 2,000 ha. Mining and extraction land has decreased by about 200 ha. The amount of profit-yielding land in Saaremee has increased by close to 40,000 ha and the amount of protected land by more than 4,000 ha. In addition, transport land and land taken up by bodies of water has increased. Mining and extraction land has dropped to one-third of the previous figure.

The area of profit-yielding land on Vormsi is up by close to 1,500 ha and there is now about 550 ha more protected land.

Table 4. Changes in land use by administrative unit, 2005 compared to 2014.  

<table>
<thead>
<tr>
<th>Administrative unit</th>
<th>Type of land use</th>
<th>Area of cadastrals (ha)</th>
<th>2005</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiiu county</td>
<td>Residential land</td>
<td>1482.3</td>
<td>2531.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Commercial land</td>
<td>110.2</td>
<td>118</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production land</td>
<td>351</td>
<td>361.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Land under inland waters</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transport land</td>
<td>925.7</td>
<td>992.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Waste disposal land</td>
<td>16.1</td>
<td>22.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>National defence land</td>
<td>16.5</td>
<td>39.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protected land</td>
<td>734</td>
<td>2593.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Profit yielding land</td>
<td>82928.7</td>
<td>91019.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Land not designated for a specific purpose</td>
<td>53.9</td>
<td>51.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mining land</td>
<td>331.3</td>
<td>128.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peat handling land</td>
<td>–</td>
<td>244.4</td>
<td></td>
</tr>
</tbody>
</table>

2 Statistikaamet. 2015.
### Important changes in BPA management

From 2002, the MAB programme was managed by SA Biosfääri Programm, a foundation governed under private law and made up of four private institutions. In 2009, the Environmental Board, a state unit, was formed, and management of the BPA was included in its area of activity. The structure of the Environmental Board includes the position of BPA adviser. In 2013, the West Estonia archipelago BPA Council was formed.

As to important documents, the supplementation of the Sustainable Development Act with the concept of BPA should be mentioned, and, in 2014, the director general of the Environmental Board approved the BPA programme for 2014-2020, along with the action plan for the West Estonia Archipelago BPA for 2014-2020.

### 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):

<table>
<thead>
<tr>
<th>Administrative unit</th>
<th>Type of land use</th>
<th>Area of cadastrals (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>Saare county</td>
<td>Public land</td>
<td>165.1</td>
</tr>
<tr>
<td></td>
<td>Residential land</td>
<td>3402.6</td>
</tr>
<tr>
<td></td>
<td>Commercial land</td>
<td>260</td>
</tr>
<tr>
<td></td>
<td>Production land</td>
<td>708.8</td>
</tr>
<tr>
<td></td>
<td>Land under inland waters</td>
<td>115.9</td>
</tr>
<tr>
<td></td>
<td>Transport land</td>
<td>206.8</td>
</tr>
<tr>
<td></td>
<td>Waste disposal land</td>
<td>23.5</td>
</tr>
<tr>
<td></td>
<td>National defence land</td>
<td>62.1</td>
</tr>
<tr>
<td></td>
<td>Protected land</td>
<td>1165.2</td>
</tr>
<tr>
<td></td>
<td>Profit yielding land</td>
<td>217107.3</td>
</tr>
<tr>
<td></td>
<td>Land not designated for a specific purpose</td>
<td>489.7</td>
</tr>
<tr>
<td></td>
<td>Mining land</td>
<td>912.7</td>
</tr>
<tr>
<td></td>
<td>Peat handling land</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Public land</td>
<td>541.9</td>
</tr>
<tr>
<td>Vormsi parish</td>
<td>Residential land</td>
<td>146.8</td>
</tr>
<tr>
<td></td>
<td>Commercial land</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>Production land</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td>Land under inland waters</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Transport land</td>
<td>42.4</td>
</tr>
<tr>
<td></td>
<td>Waste disposal land</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>National defence land</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Protected land</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Profit yielding land</td>
<td>6387</td>
</tr>
<tr>
<td></td>
<td>Land not designated for a specific purpose</td>
<td>14.3</td>
</tr>
<tr>
<td></td>
<td>Mining land</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Peat handling land</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Public land</td>
<td>4.6</td>
</tr>
</tbody>
</table>
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). See zonation map in Annex 1. Overview compiled reflecting the status as of August 2015.

2.2.3 Changes in the human population of the biosphere reserve.

Most recent census data:

In the last ten years, the population of Hiiumaa and Saaremaa has decreased by approx. 10%.\(^3\) On the basis of statistics, the population of Vormsi rural municipality has increased, but only people’s registered place of residence has changed; the actual population has actually dropped. As elsewhere in Estonia, the share of working-age people and, in particular, pensioners has increased in biosphere areas as well, and that of children and youth age 0-19 has dropped. The population is becoming concentrated more in cities and their vicinity\(^4\), but the population has also decreased in cities over the last ten years. Population decline is caused by negative natural population growth and negative migration balance, with the impact of migration being the greater factor.\(^5\) Changes in population in this decade are provided in Table 5.

<table>
<thead>
<tr>
<th>Administrative unit</th>
<th>Population in 2005</th>
<th>Population in 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saare county</td>
<td>33,820</td>
<td>31,706</td>
</tr>
<tr>
<td>Including the city of Kuressaare</td>
<td>14,140</td>
<td>13,009</td>
</tr>
<tr>
<td>Hiiu county</td>
<td>9,370</td>
<td>8,582</td>
</tr>
<tr>
<td>Including the city of Kärdla</td>
<td>3,380</td>
<td>3,093*</td>
</tr>
<tr>
<td>Vormsi rural municipality</td>
<td>270</td>
<td>277</td>
</tr>
</tbody>
</table>

* - as of 2013.

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UNESCO - Man and the Biosphere (MAB) Programme - Biosphere reserve periodic review – January 2013
2.2.4 Update on conservation function, including main changes since last report.

(Note briefly here and refer to 4 below).

The number and area of protected units has increased over the last 10 years, which is above all due to the need to ensure more effective protection of nature conservation assets. Management plans have been approved for many areas (for more, see 4.2), and data on status of places where species are found and location and status of nature directive habitats have been updated. The nature conservation status of species and habitats of pan-European importance in Estonia has improved in the last five years – more than half of them now have favourable nature conservation status. With the help of aid, the implementation of various studies, projects and events on the BPA has accelerated, which contributes to greater effectiveness nature conservation and increased public awareness. Support has been used to significantly expand the area of semi-natural communities, which is one of the greatest assets in the BPA – areas of maintained semi-natural communities have increased by 3,600 hectares in the last five years. International cooperation with various organizations and locals has grown more active, as attested to by the large number of local initiatives, such as community activity days and other events.

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

(Note briefly here and refer to 5 below).

The greatest changes have taken place in agriculture (chapter 5.3). More attention is being devoted, in the framework of different programmes and project, to developing the tourism sector. As a result, the number of tourists and accommodation providers has significantly increased over the decade (for more, see 5.2). In addition, many projects has been carried out for development of enterprise (chapter 5.6) and for improving community well-being (5.9).

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

(Note briefly here and refer to 6 below).

National-level monitoring is organized regularly on the BPA in the framework of 8 sub-programmes (chapter 6.2). In the last decade, the field of environment education and nature tourism has increased significantly. A number of nature centres have been established, visitor infrastructure has been developed and projects have been carried out for making environment education more available (6.4). The area has superb potential for sustainable nature tourism. People have started making more sustainable choices and spending time in nature has become more popular.

Heritage culture has been studied and popularized, the knowledge gained is used in BPA activities and tourism and interwoven into everyday life of local inhabitants, organizing various traditional culture events (see 6.3). International cooperation with other biosphere areas has improved (see 6.6.1 and 6.6.2).

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).

Starting in 2002, the programme “Humans and the biosphere” was implemented on the basis of non-government and non-profit activity in the form of a single foundation. The foundation was called Biosfläärkaitseala Programm and it was comprised of four private institutions: MTÜ
Läänerannik, MTÜ Saarte ja Ranniku Uurimiskeskus Arhipelaag, MTÜ Saarte Puhas Loodus and SA Kihnu Väina Merepark.\(^7\)

In 2009, a government institution, the Environmental Board, started coordinating the programme – more precisely, the Environmental Board’s Hiiu-Lääne-Saare regional office, whose structure includes a position of BPA adviser.\(^8\) In 2013, the West Estonian Archipelago BPA Council was formed, tasked with advising the Environmental Board in preparing the BPA action plan and providing input for preparation of the plan and evaluating compliance.\(^9\)

During the ten years, changes took place on the local government level. In 2013, Kõrgessaare Rural Municipality and the city of Kärdla were merged into Hiiu Rural Municipality.\(^10\) In 2014, Lääne-Saare Rural Municipality was formed through a merger of rural municipalities of Kaarma, Kärla and Lümanda.\(^11\)

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

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

The basis for coordinating the BPA and implementing the objectives is the BPA programme for 2014-2020. The implementation of the programme is organized by the Environmental Board, whose field of activity under its statute includes national environmental use policy and implementation of programmes and action plans. To support implementation of the BPA programme and involve partners in administration, the Environmental Board may form working groups, committees and a research council.

Broad-based links and cooperation with local communities is ensured by the BPA Council formed by the Environmental Board director general, in which the region’s local government, civic groups and non-profits, including business advocacy organizations and LEADER activity groups, and representatives of higher education and vocational education institutions are invited to participate. The main functions of the BPA Council is to approve the five-year action plans for the programme and if necessary to approve amendments thereto.

To perform the strategic objectives set out in the BPA programme, the Environmental Board, in conjunction with partners and the BPA Council, plans concrete activities in the five-year action plans. The plans cover both the Environmental Board’s and partners’ activities. The funding for the action plans comes from sources available for specific activities, based on the partners’ and the Environmental Board’s opportunities.\(^12\)

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

In 2014, the Environmental Board approved the Sustainable Development Programme for the West Estonian Archipelago BPA and the action plan for 2014-2020.\(^13\) The programme sets out the vision and strategic objectives of the BPA for the relevant period.

\(^7\) [http://www.envir.ee/et/uudised/biosfaari-kaitseala-kolmas-tulemine](http://www.envir.ee/et/uudised/biosfaari-kaitseala-kolmas-tulemine)


\(^9\) [http://www.keskkonnaamet.ee/organistatsioon/unesco/?highlight=biosf%C3%A4%C3%A4r](http://www.keskkonnaamet.ee/organistatsioon/unesco/?highlight=biosf%C3%A4%C3%A4r)

\(^10\) [http://www.hiiuvald.ee/uldinfo](http://www.hiiuvald.ee/uldinfo)


\(^13\) [http://www.keskkonnaamet.ee/organistatsioon/unesco/?highlight=biosf%C3%A4%C3%A4r](http://www.keskkonnaamet.ee/organistatsioon/unesco/?highlight=biosf%C3%A4%C3%A4r)
Vision

Estonia’s MAB programme (BPA programme) has achieved the development of the West Estonian Archipelago into a leading Estonian region for innovation and pilot projects in the field of sustainable use of the natural resources in local natural and semi-natural land and marine communities. The awareness of sustainable development principles in the region is high and the attitude supports this. The islands’ communities, business people and public support broad-based development of a green economy and acknowledge it as a functioning cooperation model for achieving social and economic success in the region.

Strategic objectives

- BPA has developed into a pilot project for sustainable economy and use of the natural environment and natural resources – the programme focuses its resources and sets goals for guiding the economic sectors in which “greening” is, in light of the natural and societal conditions in the BPA, the most promising as well as most efficacious in terms of maintaining biodiversity. These sectors are energy, agriculture, fisheries, forestry, tourism and planning and construction.

- Biodiversity has been preserved – maintaining biodiversity is the original main objective of the MAB programme. Protection of biodiversity is quite advanced in Estonia – both for valuable habitats and endangered species – due to which the BPA can provide indirect support for this by placing value on biodiversity in its educational function and contributing to making human activity more sustainable.

- BPA has preserved and showcased the islands’ cultural heritage – the cultural heritage of the West Estonian Archipelago is intertwined with the traditions, skills and experience with regard to traditional sustainable use of the natural environment and natural resources. Creative use and refinement of the models that previous generations used for living are key conditions for sustainable development that takes into account the particularities of the region and helps to preserve its uniqueness. Thus preserving and showcasing the BPA’s cultural heritage is important above all in terms of its nature-related aspects.

- BPA is a centre for research, monitoring and training that supports the green economy – sustainable development in today’s dynamic society requires linkage with scientific applied research and development as well as constant conveying scientific knowledge and know-how to BPA stakeholders and more broadly to all of the local community.

- Active cooperation to achieve the objectives of the BPA – the MAB programme promotes domestic and international cooperation in the field of sustainable development.  

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.

The Environmental Board’s structure includes around 26 full-time specialists, whose daily work is related to the BPA (e.g. issues concerning the use of the natural environment and natural resources, organizing nature protection, forestry and water resources etc.) with one specialist dealing solely with BPA issues. In addition to the Environmental Board, the Environmental Inspectorate has an important role in fulfilling the BPA objectives (organizing oversight), as do KAUR (national monitoring) and State Forest Management Centre (manage state forests, maintains visitor infrastructure etc).
## Current budget

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<td>2. Office and travel expenses (Environmental Board)</td>
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<tr>
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<td>National monitoring: Monitoring of plants and animals</td>
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<td>Projects funded by Environmental Investments Centre</td>
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<td>State-funded studies (e.g. nature conservation applied research (LOORA))</td>
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**UNESCO - Man and the Biosphere (MAB) Programme - Biosphere reserve periodic review – January 2013**
<table>
<thead>
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<th>Type</th>
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<th>Fund/implenter</th>
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<td>Grants (project-based)</td>
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<td>Species protection studies: European mink studies on Hiiumaa</td>
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<td>LIFE to alvars - Restoration of Estonian alvar grasslands 2014-2019 - 3725865 eur (total budget)</td>
<td>LIFE +</td>
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<td>LIFE Springday - Conservation and restoration of petrifying spring habitats (code *7220) in Estonia 2013-2018 - 835 224 eur (total budget)</td>
<td>LIFE +</td>
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<td></td>
</tr>
<tr>
<td>FFPE - Raising awareness for forest fires and training of forest fire agents and volunteers in Estonia LIFE08 2010-2012 - 300432 eur (total budget)</td>
<td>LIFE +</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Description</td>
<td>Fund/implementer</td>
<td>2005</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------</td>
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</tr>
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<td>ECOMAN</td>
<td>An ecological and economic viable concept for 100% fermentation, advanced oxidation and ultra filtration of pig manure 2005-2007 3490912 eur (total budget)</td>
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<td>1163637</td>
</tr>
<tr>
<td>GREEN ISLANDS</td>
<td>1408780 eur (total budget)</td>
<td>Interr reg</td>
<td></td>
</tr>
<tr>
<td>KNOWSHEEP</td>
<td>1175190 eur (total budget)</td>
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<td></td>
</tr>
<tr>
<td>Baltic green belt</td>
<td>2233400 eur (total budget)</td>
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</tr>
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<td>COASTSUST</td>
<td>1028530 eur (total budget)</td>
<td>Interr reg</td>
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</tr>
</tbody>
</table>
2.3.3 Communications strategy for the biosphere reserve including different approaches and tools geared towards the community and/or towards soliciting outside support.

One of the strategic objectives of the Sustainable Development Programme is to become a centre of research, monitoring and training that supports the BPA as green economy, in the framework of which the training and communication programme must be fulfilled. On this basis, the Environmental Board and its partners initiate and support educational programmes, events, study materials and informative and educational publications. Projects are implemented through and in cooperation with the various institutions in the BPA, including formal education, hobby education and informal education providers and using different communication channels. For this purpose, the approved action plan sets out the preparation of a BPA information signboard and installation of the signboard in ports and preparation and implementation of a BPA communication plan.

The objective is to achieve active cooperation in the BPA, in the framework of which the Environmental Board involves local communities in preparation of action plans. To do so, the Environmental Board prepares periodic short-term action plans for fulfilling the programme, using proceedings that are open for everyone to participate in. To this end, the Environmental Board initiates and supports public events at which both the islands’ permanent and seasonal inhabitants are welcome.

The COASTSUST project (Coastal Sustainability as a Challenge) took place from 2005-2008. The main goal of the project was to strengthen the cooperation and information exchange between the protected areas in the Baltic Sea Region. Also, the project aimed at strengthening the local cooperation. The goal was to find new models for cooperation and communication and also to exchange information about the models that already exist. During the project, four workshop seminars were held for project partners, stakeholders and other interested. The workshops focused on Community Models, and Sustainable Development, Nature and Culture as a Resource, and Information and Education. Also a study concerning local cooperation was conducted. The study analysed the problems of project areas and searched for recommendations for best practices.15

In 2014-2015, a project was held – “Involving local communities in the BPA activities”. The objective was to explain BPA related topics to local communities in order to involve them in BPA activities. To this end, the foundation Ülikoolide Keskus Saaremaal SA and the Environmental Board organized the first summer university and first winter university on BPA green economy.16 The second summer university will take place in September 2015 on Hiiumaa.

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).

The BPA action plan for 2014-2020 sets out the preparation and implementation of a BPA communication plan, in the framework of which local newspaper and nature magazines introduce the principles of the BPA. Summer and winter universities on green economy topics are also organized.

16 http://www.keskkonnakapp.ee/ulikoolide-keskus-saaremaal-sa
Various development plans are very important, and local communities are engaged in compiling them. One of the biggest success stories was the approval of the Marine Areas thematic plan in 2014. The objective of preparing the county plan for the marine area adjoining Hiiu County is to determine, in the course of a public planning process, the general conditions for use of the marine areas in the waters adjoining Hiiu County. In addition, a portal has been set up for obtaining information on the planning solution and its strategic environmental impact assessment.

2005-2008 witnessed a project called COASTSUST (Coastal Sustainability as a Challenge), which is treated in detail in 2.3.3. Also, during this project academic networking was established for researchers and protected area management through so called Research Schools. The project enabled to develop natural product and their marketing. Hiiumaa was chosen as a case example in this.

In 2014-2015, a project was held, entitled “Involving local communities in the BPA activities”, which is covered in detail in 2.3.3. In addition, various trade exhibitions, fairs and other events introducing various fields of the BPA are held, such as SaareMaaPäevad (Saare County Days) and Metsanädal (Forestry Week).

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.).

The Environmental Board with its partners initiates and supports projects for maintaining and showcasing the intangible and material heritage of sustainable uses of nature, including: preserving heritage culture assets on the landscape, preservation of local livestock breeds and domesticated plant varieties, events or exhibition demo areas to demonstrate and teach local native construction technologies and architecture, traditional farming and fishing, grazing and mowing, limestone quarrying and processing, stone wall building, forestry and landscape maintenance, handicraft and food preparation, and preparation of routes for relevant interpretive trails and more.

The Environmental Board with partners has carried out many activities for maintaining cultural heritage connected to sustainable use of the natural environment and natural resources. For this purpose, cultural heritage has been promoted and introduced, and restoration and maintenance training organized, on the local level. The State Forest Management Centre (RMK) carried out an inventory of heritage culture assets in Estonian forests, in the framework of which 13,228 objects were mapped on the BPA (11,196 in Saaremaa, 1,746 in Hiiumaa and 122 in Vormsi). In addition, the Environmental Board-initiated Vilsandi National Park memory landscapes web environment was completed – this public web application allowed users to learn about local traditions.

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17 http://hiiu.maavalitsus.ee/merealade-teemaplaneering
18 http://www.hiiumeri.artes.ee/
22 http://geoportaal.maaamet.ee/est/Teenused/Kaardirakendused/Parandkulttuuri-kaardirakendus-p160.html
23 http://www.keskkonnaamet.ee/matsa/kontakt/169117/?highlight=m%C3%A4lumaastikud
The objective of the Interreg IV project HISTCAPE (historical and natural assets) was to exchange successful strategies for sustainable management of cultural heritage and landscapes all over Europe. In this manner, HISTCAPE has made a contribution to halting destruction of historical assets in rural areas, developing sustainable management solutions that allow responsible institutions to develop a more dynamic view of cultural legacy and landscapes in rural areas. As a result of the project, a work was published (the title translates as “Cultural heritage, landscape and development of rural life. Good practices, methodology, policy recommendations and instructions for rural communities”).

To identify sociological changes in the West Estonian archipelago, the “Hiiumaa ja hiidlane” (Hiiumaa and Hiiu islanders) study was conducted. It also studied the attitudes among the inhabitants of the BPA with regard to understanding mutual relations and general attitudes toward nature and environmental conservation.

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

Traditional culture and values are becoming increasingly important in the BPA. On Hiiumaa, curative mud is harvested in Käina Bay by traditional methods and used in cosmetics and for therapeutic purposes. In Muhu, a traditional skills week is held to teach and revive basic everyday knowledge that all of our forebears knew, although modern Estonians may have forgotten the knowledge.

Various projects have been conducted, such as RECORDI, the goal of which was to improve the living and economic environment in coastal peripheral areas through in-depth use of the culture heritage in ecotourism enterprise.

Organic farming also is practised in the BPA and in 2014, the area of organic farmland in Saaremaa led all of Estonia. Organic farming means avoidance of use of chemicals and the use of various practices that Estonians’ forebears used, back when industrial chemicals did not even exist. In addition to use of traditional measures and preservation of heritage culture, organic farming is also beneficial to the environment and human health.

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?

More and more local traditional culture enhancing activities are taking place in the BPA. A book called the “Sõrve aabits” (Sõrve peninsula ABC book) is being compiled to prevent the local dialect from dying out. Vormsi ABC books have also been published, introducing Vormsi Island and its environment. The Environmental Board published a brochure called

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24 http://www.academia.edu/10386935/Kultuurip%C3%A4rand_maastik_ja_maaelu_areng_Ajaloolised_jude_v%C3%A4%C3%A4rtused_Head_tavad_metodoloogia_poliitikasoovitused_ja_juhised_maakogukondadele
26 http://www.hot.ee/ravimuda/ravimuda.pdf
29 http://www.bioneer.ee/eluviis/mahepollumajandus/aid-14297/Mahep%C3%B5llumajanduse-laialdasemad-kasutegurid
30 http://kultuur.err.ee/v/varia/24f93919-ab8e-40ab-97a0-41b0085a760a
31 http://www.vormsi.edu.ee/lasteaed
“Vormsi metsaraamat” (Vormsi Forest Book), which introduces the forests and their use and protection on the small island.32

In addition to publishing of works of literature, various events are held to promote traditional culture. Estonian islands’ traditional days are held on the islands in the BPA. These events increase cohesiveness of the community, and enhance and develop the traditional cultures of the islands.33 In addition, small islands’ song festivals are held, the first one held on Vormsi Island in 2015.34 Each year worldwide Vilsandi Island days are held, the goal being integration of former and new inhabitants.35 Muhu Island hosts a traditional skills week where the know-how of the islanders’ forebears is passed on.36 On Ruhnu Island, Korsi Farm is being restored, which is unique in Estonia due to its longhouse without a foundation, and its hunched roof.37

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?

The official language in the BPA is Estonian and the majority of the people are Estonians. There are no indigenous minorities on the BPA, but there are immigrants. As of 2015, 291 ethnic Russians, 98 Finns and 68 Ukrainians live in the BPA. Hiiu County has 70 people of non-Estonian ethnicity, and the majority of them are Russians and Finns.

Over the years, various dialects have evolved in different regions in Estonia. In the BPA as well, various dialects are spoken (overview in table 6). The dialect most commonly spoken is the insular dialect and Võru dialect is also fairly widespread.

Table 6. Number of dialect speakers in Hiiu and Saare county as of 200139

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<tr>
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</tr>
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</tr>
<tr>
<td></td>
<td>Kihnu subdialect</td>
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<tr>
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</tr>
<tr>
<td></td>
<td>Setu subdialect</td>
<td>52</td>
</tr>
</tbody>
</table>

38 Statistikaamet. 2015.
2.3.9 Management effectiveness. Obstacles encountered in the management/coordination of the biosphere reserve or challenges to its effective functioning.

There was a hiatus in the management of the BPA starting at the time the previous review was submitted, as there was a change in the institutions coordinating BPA activities. The activities of the BPA have become more active in the last five years. Currently the work of the BPA is coordinated by the Environmental Board’s Hiiu-Lääne-Saare regional office, the staff of which manage the BPA and also deal with other Environmental Board duties. BPA management is rendered more difficult by the fact that the BPA lacks a separate budget and the entirety of the funding is project-based.

The implementation of BPA has been significantly improved by the creation of the BPA Council in 2013 and, in 2014, approval of the BPA programme and action plan. In the period 2009-2015, the Environmental Board structure included a BPA adviser position. From September 2015, a West Estonian Archipelago BPA specialist position will be established at the Hiiu-Lääne-Saare regional office of the Environmental Board. The specialist will be tasked with planning and implementation of activities related to the BPA, relevant public outreach activities and coordinating the related development activities. The creation of this position should make the activity of the BPA even more effective.

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 West Estonian Archipelago biosphere is treated in the following development plans:

- The Nature Conservation Development Plan up to 2020, which is a strategy for development of fields related to nature conservation and use up to 2020.
- Hiiu County Plan the purpose of which is to shape the territorial and economic development strategy and concepts for the county and balance state and local interests.
- Lääne County plan, through which the general human society and natural environment impacts are regulated and consensus is found.
- Vormsi Rural Municipality Development Plan for 2011-2025. This document sets out a broad-based strategic framework for shaping the future of the rural municipality. It

<table>
<thead>
<tr>
<th>Tartu dialect</th>
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</thead>
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<tr>
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<td>South-Estonian dialect</td>
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<td>Coastal dialect</td>
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</tr>
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<td>Western dialect</td>
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</tr>
<tr>
<td>Mid dialect</td>
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</tbody>
</table>
involves ‘those interested in Vormsi’s development and determines the resources necessary for implementing the development plan.

- Development Strategy of Saare County 2020, which forms a framework for development activities being planned in the county, encompassing the main trends that encompass the county as a whole or a significant part thereof.

- The Hiiumaa development strategy 2020+ the island community self-renewal process in which, in cooperation between various parties, the economic, social and ecological vitality of the community and Hiiumaa’s international competitiveness is developed.

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

The BPA programme and action plan was approved only in 2014, as a result of which there are no results to report. This programme will be the basis for planning and implementing BPA-related activities; among other things, the planned activities pertain to nature tourism, energy, restoration of habitats and enhancing the value of local raw materials.

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

Local community, local governments and entrepreneurs are the main implementers of the programme area goals. Thus the local community is involved in very many associations and organizations in order to fulfil the BPA objectives. Civic organizations and non-profit associations, including business advocacy organizations and LEADER groups (such as Saarte Koostöökogu and Hiidlaste Koostöökogu) take part as partners in implementing the BPA sustainable development programme. In addition, these partners also participate in the preparation of five-year action plans and agreed upon activities. To finance the various activities, the Environmental Board can also, if need be, enter into agreements with the abovementioned associations.41

To achieve the BPA’s objectives, various trainings, seminars and events are held for local inhabitants, in the framework of which the local community is involved in the BPA activities. For example, the project “Kohalike kogukondade kaasamine biosfääri programmiala tegevustesse” (Involvement of local communities in BPA activities) is covered in 2.3.3.

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.

Women are well represented in bodies that organize BPA activity. The Environmental Board’s regional office director and the BPA Council chairman, both of them women, are very important decision-makers in the BPA. Women are represented in all of the organizations that carry out BPA activities, from the LEADER groups to business advocacy organizations. There are also organizations that consist solely of females, such as ESK Naiskogu MTÜ Saare Naised.

There are no studies in Estonia that have examined whether men and women have different access to and control over sources of income or which sources of income do women control.

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

The zonation of the BPA continues to be based on the protection regimes in use in the Estonian nature conservation system, where the core areas are made up of strict nature reserves and special management zones and the buffer zones are made up of limited management zones, special conservation areas, species protection sites and environmental impact assessment areas (at least 50 m around core areas). An overview of the changes to areas by each zone is provided in Table 2.

During ten years, the Estonian Nature Conservation Act has been supplemented. A provision added in 2007 stipulated that people are only allowed to be present in strict nature reserves during surveillance and rescue operations and for the purpose of administration and organizing conservation management. The section on limited management zone has been supplemented on several occasions; for instance, since 2007 it has been prohibited to alter the water level and shoreline of bodies of water or to mine natural resources, unless the protection rules set forth otherwise. An amendment introduced in 2014 specified that the protection rules can set various restrictions on the size and shape of cutting areas in logging operations, various restrictions set forth in the Forests Act on the age structure, and time restrictions on logging necessary for preservation and improving living conditions of natural communities or protected species within communities.32

Species protection sites were formed for species protection purposes to protect a specific species and the protection procedure for the relevant area is set forth by regulation. Species protection sites can consist of zones with different levels of strictness. The activities permitted and prohibited in species protection sites have been refined based on the status of the species and their habitats and risk factors.

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?

Each year, the Environmental Board orders various research and inventories in the BPA and initiates a number of projects, including international environment-related projects.

State monitoring is carried out in the BPA in the framework of the following programmes: biodiversity landscapes, inland bodies of water, groundwater, radiation, marine monitoring, meteorological monitoring, ambient air, integrated monitoring. The monitoring data allow changes in the BPA’s natural parameters and general environmental state to be evaluated and activities planned.

National monitoring is carried out by various institutions, such as universities and state institutions such as the Environmental Agency.

Marine habitat studies:

The University of Tartu’s Estonian Marine Institute (EMI) has a permanent base in Kõiguste. EMI has conducted the study “Marine Protected Areas in the Eastern Baltic Sea”. In the period
2003-2007 coastal marine processes were studied. The research provides important information for realization of sustainable development and the Convention on Biological Diversity. In 2014-2015, Estonian marine assets were inventoried and monitoring methodology was developed. At the present time (2013-2018), coastal waters ecosystem studies are under way to investigate the cumulative impact of pressure factors on diversity and function of marine ecosystems.

In 2010-2011, the Estonian Marine Biological Association carried out an inventory of seabed habitats in the Estonian economic zone. In 2010-2011, the Estonian Fund for Nature inventoried the marine area around Kõpu peninsula.

**Sustainable use of the marine environment:**

Over many years, the University of Tartu EMI has carried out research regarding red seaweeds and economic algal reserves in Kassari Bay. The possibility of growing red seaweeds and its impact on the marine environment was studied by Vormsi Agar OÜ in 2013-2014. In the years 2006-2007, a project involving follow-up studies of whitefish spawn in the Väinameri Sea, and Lääne, Hiiu and Saare County took place. In 2012-2013, Hiiu County Government commissioned spatial planning of the marine areas of Hiiu County.

In 2014, EMI studied the benthos, habitats, ichthyology and fish species in the offshore wind farm near the northwest coast of Hiiumaa. In 2010-2012, the University of Life Sciences conducted the project “Liivi laht kui tuuleenergia ressurss (GORWID)” (Gulf of Riga as a resource for wind energy, GORWID) in the framework of the INTERRG EST_LAT 2007-2012 programme.

**Land habitat studies:**

The University of Tartu and the University of Life Sciences carried out a project called “Looduskaitse rakendusuuringud (LOORA)” (Nature conservation applied research), in the framework of the programme “Keskkonnakaitse ja –tehnoloogia teadus- ja arendustegevuses (KESTA)” (Environmental protection and technology in research and development); the studies encompassed the fields of biodiversity and preservation of natural areas. One objective was to assess the condition of semi-natural communities and effectiveness of management through preservation of species native to such communities and economic subsidies. A significant research object on Saaremaa was the alvars and on Hiiumaa, coastal grasslands.

In 2011-2012, the University of Life Sciences conducted a comprehensive applied nature conservation study on Hiiumaa’s small offshore islands that investigated communities of birds, plants and invertebrates on islands and the ecological interconnections between landscape and habitats.

**Species protection studies:**

One species protection study that deserved mention is certainly the European mink studies on Hiiumaa.

For instance, the technical supplementation of the surveillance of the Hiiumaa population of the European mink, *Mustela lutreola*” (SA Lutreola 2014-2015), “Euroopa naaritsa liigikaitseliste rakendusuuringute varustamine töövahenditega ning SA Lutreola kodulehe kaasajastamine” (SA Lutreola 2014-2015). In addition, a number of seal-related studies have been conducted.

**Hunting.**
In 2011-2012, the University of Life Sciences evaluated from a forestry management perspective the expansion of the range and abundance of deer (the main studies were on Saaremaa and Hiiumaa).

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 activities carried out in the BPA are project-based and during the year, a number of programmes were added in the framework of which money can be requested for various projects. The various EU-funded programmes, such as LIFE+, Interreg Baltic Sea Region, and the Environmental Programme, are very important. As the BPA has many partners all of whom are involved in implementing the BPA sustainable development programme, there are many enthusiastic groups that apply for support in the framework of the programmes.

Active cooperation takes place with all parties with the aim of achieving the BPA objectives. For instance, representatives of the Environmental Board participate in events for coordinating BPA activities, give expert analysis regarding important projects and programmes. The results of major studies are introduced within the Environmental Board. BPA-related information is distributed via the BPA list.

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

West-Estonian Archipelago Biosphere Reserve effectively combines conservation, sustainable use of resources and knowledge generation through integrated zonation and collaborative management.

For example: Integration of management of seminatural grasslands and producing local food and nature education and nature tourism.

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 young people living in the BPA are united by youth councils operating at the county level (Saaremaa Noortekogu, Hiiumaa Noortekogu Ankur) and youth councils operating at local governments (such as Kaarma and Mustjala youth council) where young people can make their interests heard and take part in decision making processes.43

Young people in the BPA can also participate in various courses and take part in projects. Each year, the Environmental Board organizes Junior Ranger courses in Estonian national parks, designed to increase young people’s environmental and nature awareness and create and develop youth cooperation networks around national parks. The two best young people from the course go on to represent Estonia at the international course European Junior Ranger.44

In 2012-2013, five rural schools on Saaremaa participated in the project Growing Gastronauts, whose activities increase youth interest and awareness of healthful eating, locally sourced food

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43 http://www.enl.ee/et
44 http://www.keskkonnaamet.ee/teenused/keskkonnaharidus-2/junior-ranger/
producers and short supply chains, from field to plate. In 2013, this project won the top prize as best LEADER TNC project in the subcategory “Local resources and the environment”.

In addition, activities were carried out in 2011-2013 with young people in the municipalities of Saare County to increase youth sensitivity to the state of the environment (the Planet Said To Me project). Each year, various subtopics are in the focus, such as protection of water resources and water conservation, recycling and resource conservation and alternative energies and energy conservation.

Youth also have the opportunity to take part in a national science project competition, in which Saaremaa Ühisgümnaasium takes part actively and has received several prizes. The goal of the competition is to increase interest among children and youth in the world around them, support research-based teaching and learning in schools and encourage young people to study topics that are interesting to them and whose results would be important to others as well. In addition, there are also regional science project competitions. For instance, Hiiumaa has hosted environment-related research project student conferences at least ten times.

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/)).

Valuable ecosystems in the West Estonian Archipelago Biosphere Reserve are the sea, bays, lagoons and reed-beds, rivers and ditches, grasslands (coastal, alvar, alluvial or marshy), woodlands and islets. The importance of these ecosystems is dealt with in more detail in the previous review.

At the present time, ecosystem services have not been mapped and evaluated in Estonia, but in 2018, the state of ecosystems must be evaluated along with mapping of the benefits they provide. In 2012, a discussion on ecosystem services took place, aimed at getting an overview of the work being done in Estonia to evaluate ecosystem services and to discuss how to uniformly approach evaluation in Estonia and meet the EU Biodiversity Strategy’s objective of enhancing ecosystem services.

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.

In Estonia, it is planned to map by 2018 the state of ecosystems and the benefits they provide. In the course of this work, the indicators of ecosystem services will also be determined.

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).

45 http://skk.ee/koostooprojektid/growing-gastronauts/
46 http://esto-growinggastronauts.webnode.com/
47 http://skk.ee/koostooprojektid/planet-said-to-me/
50 http://www.envir.ee/et/looduse-huved-ehk-okosusteemiteenused
A number of different ecosystems are represented in the BPA and the species richness in these ecosystems is noteworthy. The list of species is laid out in Annex 5, and Table 7 sets out the taxonomic classes that are classified by the Nature Conservation Act in the various protection categories.
Table 7. Taxonomic classes under protection in the BPA

<table>
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<th>Protection category</th>
<th>TOTAL</th>
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<th>Hiiumaa with sea</th>
<th>Vormsi with sea</th>
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<td>1</td>
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<td>1</td>
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<tr>
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<td>0</td>
<td>1</td>
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<td>Reptiles</td>
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</table>

51 EELIS (Eesti Looduse Infostüüstem - Keskkonnaregister): Keskkonnaagentuur.

UNESCO - Man and the Biosphere (MAB) Programme - Biosphere reserve periodic review – January 2013
The following lists some of the most important ecosystems in the BPA.

- **Mires**

A mire is an area or ecosystem where a large part of organic matter does not decay and accumulates as peat. The main mire types include fens (low bogs), raised bogs and transitional mires. A mire is an area where the thickness of peat is 30 cm or more and the accumulation of peat has not stopped. A fen is a type of mire that is fed by groundwater. A raised bog is a type of mire where the layer of peat is so thick that the bog domes above the surrounding landscape and the plants only get nutrients from rainwater and water-sodden dust particles. A transition mire is a type of mire where plants draw their nutrients from both groundwater and rainwater: those growing on higher hummocks and ridges are exclusively dependent on nutrients from precipitation; the roots of those plants that grow in hollows between hummocks reach the groundwater.  

Figure 1 gives the percentages of mire in the total area of the county and the range in the BPA of Nature 2000 mire types defined in the EU nature directives.

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As the figure shows, Saaremaa has the most mires. The only part of Lääne County that is in the BPA is the island of Vormsi. The figure shows data for the whole county and in general, Lääne County is rich in mires; however, Vormsi has none. Whereas 7230 is the main type of mire on Saaremaa, habitat type 7110* is the one most prevalent on Hiiumaa.

- **Meadows**

A meadow refers to an ecosystem vegetated primarily by grasses and perennials that need some moisture in the ground throughout the growing season. A meadow with groups of trees or sparsely growing individual trees is called a wooded meadow. Meadows are divided into primary or natural meadows and secondary or anthropogenic meadows. Primary meadows are only found in exceptional ecological conditions where something prevents bushes, trees and shrubs from growing (flooded alluvial and coastal meadows; limestone pavement meadows). Secondary meadows are formed from forests and shrubbery as a result of human activity (felling, burning, grazing, mowing). Primary meadows are habitats for natural communities; secondary meadows are habitats for semi-natural or cultivated communities.

Figure 2 gives the share of meadowland in the total area of the county and the range in the BPA of the Natura 2000 meadow types.

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53 ESTEA (the Estonian Environmental Agency), 2014
Figure 2. The share of meadows in county territories and the share of Natura 2000 meadow types in the BPA.  

Meadows make up 10-12% of the area of Saaremaa; 5.9.9% of Hiiumaa. On Saaremaa, the highest percentages belong to 6280* and 1630*, while on Hiiumaa, the 1630* habitat type makes up over half of the meadow types.

On Vormsi, maintained grasslands cover 14% of the island. There are very few coastal meadows, wooded meadows and other semi-natural grasslands remaining on the island.

- Forests

A forest is an ecosystem dominated by trees. Forests as plant communities with the highest biomass levels are important because they regulate the gaseous composition of the atmosphere. A forest refers to an ecosystem consisting of forest land and the associated vegetation and wildlife. Forest land refers to a land parcel that is registered in the land cadastre as forest land, or a piece of land with an area of at least 0.1 ha, dominated by woody vegetation with a height of at least 1.3 m and with canopy density not less than 30%. Yards, residential land, parks, cemeteries, green areas, berry gardens, orchards, forest nurseries, garden centres, arboreta, and plantations of trees and shrubs are not considered forest land (the Forest Act).

Figure 3 gives the share of forests in the total area of the county and the range in the BPA of the Natura 2000 forest types.

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56 ESTEA (the Estonian Environmental Agency). 2014
Figure 3. The share of forests in county territories and the share of Natura 2000 forest types in the BPA.  

Forests cover 60-71% of the area of Hiiumaa, which is Estonia’s highest figure for a county. Forests cover 55-60% of the area of Saaremaa. On Hiiumaa, 9020* and 2180 are more or less tied for most prevalent forest type, but there is also a large share of 9080*. On Hiiumaa, 9020* is the predominant type and 9080* has a relatively high share as well.  

Forests cover 70% of the area of Vormsi. The particularities of Vormsi’s forests are the relatively high share of alvar forests. The forests are mainly pine, with less spruce and birch forests. The forest mainly grew in the last 60 years on former pasture and hayfields.  

- Coastal waters  

In the Väinameri region, close to 40% of the waters are, pursuant to the habitat types listed in Annex 1 to the EU nature directive, 1110. There are also 1150*, 1160 and 1170 habitat type areas.  

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.  

Estonia does not have yet any supranational case study on biophysical mapping or the mapping and assessment of ecosystem services, but does have few rather small pilot studies attempting to find monetary value of ecosystem services and some other smaller projects related to the topic.  

The three main initiatives that have been performed or launched lately in Estonia on the ecosystem services topic are:  

- The objective of two rather small related pilot studies was to get a general overview of ecosystem services provided by protected forest areas and protected wetlands base on concrete nature conservation areas, investigate best possible methodologies for economical assessment of provided services and in second phase of the projects to carry out economical assessment of chosen services. More general rationale for the action was to find economic value of protected areas, which one to compare with business value of the area. Experiences gained through case studies might be valuable rationale for nature protection, when strong opposition is met.  

- The project “Possible ways to use information about changes in land use and ecosystems services in land-use planning” contains different academic studies on the topic as well as a first attempt to have ecosystem services of the oldest national park – Lahemaa National Park – mapped. Outcome of the project is methodology for ecosystem services mapping and assessment, which allows us to take into consideration changes in inland use. Suggestion will be given for management and sustainable land-use of valuable landscape and spatial planning of protected areas.  

60 ESTEA (the Estonian Environmental Agency). 2014  
• The project “Development of methods for assessment and mapping of ecosystem services of marine and inland waters” (EMP) started in May 2014. Outcome of the project is a tool for environmental management – methodology for mapping and assessing of ecosystem services of water ecosystems together with list of supporting indicators and suggestions for economic assessment of ecosystem services.65

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).

Over 9,300 ha of seminatural coastal meadows have been maintained in accordance with the conservation requirements during last 10 years period.

The European mink (Mustela lutreola), which is listed by the IUCN as Critically Endangered due to an ongoing reduction in numbers has been introduced successfully to the wild nature in West-Estonian Archipelago Programme area.

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.

A number of new protected areas have been established on the BPA and the existing ones have been expanded. Nature conservation programmes and projects are carried out. One of the largest-scale ones is the nature conservation part of the Environment Investment Centre-funded Environmental Programme. Measures for implementing the nature conservation programme:

• Implementing measures that ensure planning of long-term development and sustainable development. For example, identifying (inventorying) and conducting applied research into protected or relatively little studied habitats, species of animals, plants and fungi, natural features with cultural value and ecosystems and ecosystem services.

• Maintaining and organizing protection for natural habitats as well as reserves, special conservation areas, nationally protected parks and individual natural features;

• Developing nationwide nature conservation infrastructure. For instance, developing visitor centres for protected areas.66

An overview of semi-natural communities restored and managed using support from 2005-2015 is given in Table 8.

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66 https://www.kik.ee/et/elusloodus/keskkonnaprogrammi-looduskaitsse-programm/looduskaitsse

<table>
<thead>
<tr>
<th>Year</th>
<th>Managed semi-natural grasslands</th>
<th>Restored semi-natural grasslands</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area (ha)</td>
<td>Cost (eur)</td>
</tr>
<tr>
<td>2005</td>
<td>5712</td>
<td>1085280</td>
</tr>
<tr>
<td>2006</td>
<td>5101</td>
<td>969190</td>
</tr>
<tr>
<td>2007</td>
<td>4874</td>
<td>912251</td>
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<tr>
<td>2008</td>
<td>6408</td>
<td>1200049</td>
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<tr>
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<td>7644</td>
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<tr>
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<td>9299</td>
<td>2183916</td>
</tr>
<tr>
<td>Total</td>
<td>89663</td>
<td>1725538</td>
</tr>
</tbody>
</table>

Nature protection activities are also supported by the European Regional Development Fund (ERF) the measures of which are preservation of biodiversity and preparation of management plans for protected areas and action plans for species for preservation of biodiversity.67

Many of the protected areas located in the BPA have prepared management plans that serve as the applied action plan for the protected areas. The preparation of the plans is organized by the Environmental Board. The plan specifies the most important environmental factors, their impact on the natural features, conservation objectives, work and measures necessary for achieving, the order of priority for performing the works, timetable and volume and budget for implementation.68 As of 2015, 131 management plans have been approved in the BPA and starting in 2006, the protection procedure has been updated for 219 areas.69 In the framework of preparing management plans and updating the protection procedure, a number of inventories were ordered, predominantly for the purpose of gathering or updating Natura habitat or species data. In the framework of the same programme, species protection action plans have been drawn up for the entire country. These are the basis for organizing protection of the most endangered species in Estonia.

Management of valuable semi-natural communities and compensation of revenue forgone by owners of farmland and private forest due to restrictions on Natura areas takes place from rural development plan funds.70

In the period 2007-2013, environmental projects were also funded by the programme LIFE+, one topic heading of which was nature and biological diversity. LIFE+ nature projects should contribute to the implementation of the bird and/or nature directive at the local and regional level and support the further development and implementation of the Natura 2000 network.

67 http://www.struktuurifondid.ee/mis-on-tehtud/
68 http://www.keskkonnaamet.ee/keskkonnaregister
69 EELIS (Eesti Looduse Infosüsteem - Keskkonnaregister): Keskkonnaagentuur. 2015.
including with regard to coastal and marine habitats and species. Various nature conservation work has taken place on protected areas in the framework of the LIFE+ programme (e.g. visitor infrastructure has been established) and brochures have been published.

One of the most important international nature conservation projects in the BPA is a project carried out in the period 2010-2012, “Natureship – Integrated planning and management in the Baltic Sea Region,” in the framework of which research into coastal lakes of Lääne County and Saaremaa was organized. The project places value on protection of habitats and valuable landscapes and ecosystems as a whole, assesses the vitality of ecosystems and provides valuable input for decision-makers.

Also, the project entitled “Estonian Mires Inventory completion for maintaining biodiversity” was carried out in 2008-2011, aimed at contributing to protection of biodiversity of Estonian mire areas. An extensive geobotanical inventory was conducted in the framework of the project, and used to prepare additional proposals for protection and use of wetlands. As a result of the project, the Ministry of the Environment’s Natura 2000 database and the Estonian Nature Information System EELIS were updated. In addition, the international conference “Mires as Wilderness” was organized and a publication issued, “Estonian Mires: Inventory of Habitats”.

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)?

Voluntary nature protection on the part of private landowners is characterized by preservation of key biotopes. A key biotope is defined as being a place with an area of up to seven hectares that requires protection, lies outside a protected natural feature and where the narrowly adapted, endangered, vulnerable or rare species are likely to be present. As of 2015, a total of 53 agreements have been signed with private forest owners in the BPA for the protection of key biotopes with a total area of 125.6 hectares. The contracts are signed with the state for 20 years, and the owners are paid a corresponding fee/compensation in exchange for the restrictions.

Semi-natural communities are one of the greatest neural assets in the BPA. Support is paid for management and restoration of the areas in the framework of the rural development plan and the Agricultural Registers and Information Board is the processor of the support. As of 2015, the BPA has approx. 9,300 hectares in managed semi-natural communities.

In connection with changes to legislation, the extent of sorting and separate collection of waste in companies and domestic households has increased significantly over the last decade. In 2005, 20% of the waste generated in Estonia was recovered, the figure for the next five years was 33%. In 2011, the rate increased to 55%.

In addition, many projects have been carried out in the BPA that integrate sustainable development and nature conservation. The following are a few of the most important examples.

- From 2010-2012, the Act4MyBalticSea project was carried out (supported by INTERREG IVA programme), which was designed to increased the attention paid to clean coastal waters by inhabitants of the islands and coastal areas, holiday-makers and local

71 http://www.envir.ee/et/life-programm
72 http://www.keskkonnaamet.ee/organistatsioon/rahvusvahelised-projektid/natureship/
73 http://elfond.ee/et/teemad/raaba/10-000-sood/eesti-soode-looduskaitseline-hindamine
governments. Partners included two Swedish local governments, the city of Uusikaupunki in Finland and Pihtla Rural Municipality in Saare County (a total of four local governments). Two universities were also partners: Uppsala University and Tallinn University of Technology’s Kuressaare College. The project steering group included a water specialist from the Environmental Board and cooperation was pursued with other local governments and interest groups in the BPA region. The knowledge gained from the project were used in compiling a resource on methods of treating wastewater from individual households in lightly settled parts of Saare County (“Saare maakonna hajaasustuse üksikmajapidamiste reovee käitlemisviiside määrajat”).

- 2010-2013 saw the project “Green Islands,” which was based on mapping and analysis of environmental status and involved observation of waste handling, energy and water resource consumption and waste water treatment issues on Muhu Island and which saw the preparation of a detailed map of ground water protection for Muhu Rural Municipality.

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

(Describe the methods, indicators used).

The BPA has a high species diversity and new protected areas have been established and the existing ones expanded in order to protect species diversity. In addition, management plans have been approved for many areas. Management plans are used to carry out key activities and evaluate the effectiveness of protection measures and activities. Outside the protected areas, the effectiveness of measures and programmes can be assessed on the basis of national environmental monitoring results, and an environment impact assessment is conducted for development projects with a significant environmental impact, if necessary, additional monitoring is planned.

More and more value is being ascribed to semi-natural communities – one of the most valuable ecosystem in the BPA. This is indicated by the increase in the area of semi-natural communities by 3,600 hectares in the last five years. Each year, up to 1,300 hectares of semi-natural communities has been restored. Projects are also carried out at the international and regional level, with various studies carried out and strategies developed for the protection of biodiversity.

In connection with the adoption of the BPA programme and action plan in 2014, the Environmental Board will in future prepare an annual report on fulfilment of the action plan programme. The report will be submitted to the programme Council, which shall provide its assessment and, if necessary, issue recommendations for making the activities more efficacious and propose adjustments to the action plan. The report, accompanied by the BPA Council evaluation and proposals, shall be forwarded to the UNESCO Estonian National Committee and made publicly available at the same time. In 2017 and 2021, the Environmental Board shall commission evaluation of the programme from independent evaluators. The results of the evaluation shall be taken into consideration in one case if the programme needs additional review or adaptation of implementation, and in a second case in preparing the BPA programme for the next period. The programme review will be the basis for evaluating the effectiveness of the strategies applied.

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76 http://www.ttu.ee/asutused/kuressaare-kolledz/karendus/kontakt-54/lopetatud-projektid/
77 http://saared.ee/?page_id=162
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?

The efficacy of environmental measures both in and outside the protected area will undoubtedly have the greatest impact on people’s awareness and desire to preserve their living environment. The efficacy of protection on protected areas is impacted by the approval of the new protection procedure, gathering of precise data, implementation of management plans and the conducting of various projects at the international and regional level. It is important to involve local inhabitants in nature conservation topics, sustainable development topics in general, and supporting similar conservational activities and distributing information.

The development of the BPA was negatively impacted by the hiatus in the management of BPA in connection with the change in the management institution (see 2.2.7)

4.6 Other comments/observations from a biosphere reserve perspective.

None.

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 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).

Saare County is one of the Estonia’s most entrepreneurially active regions, with around 60 undertakings per 1000 head of population. As of 2012, there are 4,221 companies in Saare County, and 2,400 of them are actively in operation.78

As of 2013, there are 1,284 undertakings in Hiiu County, 354 non-profit associations and nine foundations. The number of companies has increased by the most – by 152 companies starting in 2009.

In 2009, 63% of the companies on Vormsi were private limited companies, with sole proprietors making up 37%. In 2009, Vormsi Rural Municipality had 22 companies in the primary sector, 16 in the service sector and 2 companies in the industry sector.

The following is an overview of the economically most important sectors in the BPA. The changes in the primary sector are dealt with in greater detail in chapter 5.3.79

- **Food processing industry**

  The food processing industry is the largest processing industry, where the main profit comes from meat and fish industry; the dairy industry is making a slight loss. Of the sector, the fishing

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industry makes up 42%, the meat industry makes up 26%, and the dairy industry makes up 25%. Most of the meat industry’s output is marketed domestically in Estonia as is about half of the fishing industry’s production; the rest mainly is exported to Russia and Ukraine. The main share of the dairy industry goes to the Estonian market, but also to western and eastern countries’ markets.\(^\text{80}\)

The food industry was once the most important sector on Hiiumaa, but now the island has only small production. In 2009, the Estonian University of Life Sciences initiated a project to promote organic farming and products on Hiiumaa, the aim being to process animal and produce into organic products.\(^\text{81}\) In 2012, the Vaemla product development centre, which has major importance, was completed and Hiiumaa Lihatööstus meat plant was launched, which allows island-raised meat to be processed locally.\(^\text{82}\)

- **Plastic industry**

Plastic companies have been the engine driving Hiiumaa’s economy for the last 10-15 years. In general, the plastic industry has experienced balanced growth, though a certain setback took place in 2008, when demand for plastic products on Hiiumaa dropped suddenly and demand was lower than it had been.\(^\text{83}\) Competitiveness is ensured by the efficiency of modern technology and the need for manual assembly operations. As a rule, smaller and medium size lots are produced on Hiiumaa, as a result of which Asian producers are in a logistically inconvenient place. Compared to the Nordics, the advantage is the cheaper workforce. Locals value the plastic companies as employers.\(^\text{84}\)

- **Electronics, rubber and cable industry**

Saaremaa’s greatest export volume and the greatest number of jobs are found in this sector. Product development, strategic planning and marketing takes place outside Estonia, at the parent company. Products are exported nearly 100% to the parent company’s country of location.

Turnovers in both the rubber and electronics industry are very sensitive to trends in the world economy. Turnovers in the period 2009-2011 experienced a stable rise in the case of both companies and they started dropping in 2012. This drop resulted in a decrease in the number of employees.\(^\text{85}\)

- **Tourism**

Saaremaa is one of Estonia’s most important tourist destinations after Tallinn, Pärnu and Tartu. Saaremaa’s tourism is highly seasonal, with about half of the volume concentrated in summer months and Kuressaare’s spa hotels the main draw.\(^\text{86}\) Tourism is an important employer for the county’s inhabitants and development of the county as a tourism district will significantly increase its value as a living environment as well.\(^\text{87}\)

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Hiiumaa’s tourism sector is made up by the hotel and restaurant industry. In 2009, Hiiumaa’s target markets were defined: Estonia, Helsinki and Riga. The Kärdla marina opened in spring 2014 is an investment with key importance for the tourism sector. After the Kuressaare marina was completed, hotels started going up rapidly near the marina and Hiiumaa is hoping for the same trend.

One of the predominant areas of activity on Vormsi Island is the tourist sector. From 2009 on, increasing visitor load has been noted, but tourism is still very seasonal.

- Transport

Road, sea and air transport exist on Hiiumaa. Air transport is routed through Kärdla Airport. Hiiumaa does not have a shipping company, and thus it mainly has companies dealing with road transport. In regard to employment, this is a very important sector, as 10% of Hiiumaa’s workforce is employed in the sector and their salary is above average. The high price of fuel and low price of service curtail the development of the transport sector.

For the sector to develop, it would be important to create a year-round and stable permanent link between Hiiumaa and Saaremaa to develop inter-island enterprise that would be a stimulus for both tourism and cooperation in this field.

Maritime transport plays a leading role on Saaremaa, and it is in the hands of three companies. The financial results of ferry traffic depend directly on visitor flows to Saaremaa. Tens of small business operate in the field of automotive transport, dealing with international transport of goods and operating domestic bus routes. Saaremaa is home to Kuressaare Airport, which is open to both domestic and international flights. Kuressaare Airport also includes Ruhnu airfield on Ruhnu Island.

Vormsi is linked to the mainland by both ferry and water taxi. In addition, the island has a local bus line and there is the possibility of hiring cars from ATVs to electric cars.

- Recreational craft building

Saaremaa’s recreational craft building industry is diverse: companies build wooden rowboats, motor boats and sailboats; aluminium and metal pleasure cruise ships and work boats (patrol boats, pilot boats, trawlers, diving boats); Plexiglas sailboat and cabin cruisers and plastic speedboats. Sales revenue rose in 2007, then declined a bit. From 2010, the revenue started rising consistently again. The entire Estonian recreational craft construction sector’s profit mainly comes from Saaremaa (97%). Employment has not changed much from 2007 to 2012, which means that companies are making greater profits with the same number of employees.

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

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90 http://www.invest.laanemaa.ee/et/omavalitsused-laanemaal/vormsi-vald/
95 http://tule-vormsile.ee/avasta-vormsi/transport/
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.

In the period from 2005-2014, the number of rooms offered by accommodation providers on Saaremaa and Hiiumaa has grown, as has room occupancy, which means growth in tourism. Figures 4 and 5 present the changes in number of rooms and occupancy on Hiiumaa and Saaremaa. An increase in Saaremaa tourism is not immediately noticeable, as the number of rooms has nearly doubled, and thus the room occupancy percentage is lower. The figures also show the seasonality of tourism.

![Figure 4. Changes in number of rooms and occupancy on Hiiumaa as of 2005 and 2014.](image)

![Figure 5. Changes in number of rooms and occupancy on Saaremaa as of 2005 and 2014.](image)

In 2011, Saaremaa received 182,718 foreign visits, which was 7.3% less than in 2010; 49% of the visitors were Finns. Estonians visited Saaremaa 293,523 times, which was 4% less than in 2010. Close to 55% of both foreign and domestic visits were made from June to August. In both cases, over 50% of visitors were to Kuressaare and the rest to other places in the county.

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97 Statistikaamet.2015.
Hiiumaa received 27,970 visits from tourists which was 9.9% less than in 2010. Forty-two percent of the visitors were Finns. Hiiumaa received 125,090 visits from tourists in 2011, which was 7.3% less than in 2010. Hiiumaa has the highest summer concentration of tourism in the West Estonia region – 66% of domestic visits occur from June to August. The travel destination for 39% of both domestic and foreign tourists was Kärdla and for 61%, the rest of Hiiu County.  

To develop the tourism sector, the last 10 years have seen tourism development plans compiled at the county level, a the launch of a western Estonian tourist website, publication of tourist catalogues, seminars organized and different projects initiated and carried out. The following sets out some of the more successful and major projects:

- In 2009-2011, the project “AGORA 2.0 – Heritage Tourism for Increased Baltic Sea Region Identity”. The project involved 23 partners from all EU countries on the Baltic littoral. Agora 2.0 aims at strengthening the common identity of the Baltic Sea Region, based on its rich natural and cultural heritage. As a result of the project, a western Estonia tourism website was developed, an image publication on the region was published and familiarization trips for foreign journalists and tour operators have been organized.

- From 2010-2012, Hiiumaa and Saaremaa were partners taking part in the Central Baltic Sea INTERREG IV programme project “Geoturismi edendamine Kesk-Lääinemere saartel” (Furthing geotourism on the islands in the central Baltic Sea) The objective was to stimulate interest among foreign tourists regarding Estonia’s unique natural environment. The project lead partner was Uppsala University from Sweden. As a result of the project, the first book in the series was published in February 2010 along with the video film, “Geotourism highlights of the Saaremaa and Hiiumaa island”.

- In 2009-2012, SA Saaremaa Turism prepared a tourism marketing project, “Rändaja teekonnad Saaremaal ja Hiiumaal” (Wayfarer’s journeys on Saaremaa and Hiiumaa).

- In 2012, the project “Central Baltic Cycling” was launched, the goal of which is to encourage tourists to visit the countries on the Baltic littoral and offer tourism experiences in regions far from the capital.

- 2012 saw the launch of the project “Tuletornid turismitooteks” (Turning lighthouses into tourism products) in the framework of the Interreg IIIA programme, the main goal of which is to promote lighthouse tourism on the southern coast of Finland and in Estonia. Two lighthouses are located in the BPA (Kõpu and Ruhnu), which have been placed under international protection by the IALA, the International Association of Lighthouse Authorities. In addition the Kõpu lighthouse is among the world’s three oldest continuously operating navigation marks.

- 2014 saw the initiation of the project “Sustainable use of the natural environment and natural resources and cultural heritage in the economy/tourism of small islands,” the goal of which is to gather ideas and prepare a list of joint development projects necessary for...
the smaller islands, reviewing the ideas and preparing a specific project application on the basis of the idea selected. The main emphasis is specifically on ideas that stimulate the supply of tourism services on smaller islands.¹⁰⁵

There have not been any studies on the impact of the creation of the BPA on tourism in Estonia. Changes in demographic processes on protected areas in general were dealt with in a bachelor’s thesis by Arti Unt¹⁰⁶ as well as earlier in the framework of the LOORA (nature conservation applied research) project. The study revealed that the population in protected areas is mainly ageing and decreasing rapidly in comparison to Estonia’s general demographic processes, mainly as a result of emigration by young people presumably in search of work or education. The major demographic decline is resulting in socioeconomic problems in the protected areas. It is not possible to distinguish sufficiently clearly the impact of protection restrictions on Estonia as a whole, as many simultaneous processes that have significantly (and negatively) impacted the rural economy and population have taken place. Rather, it can be said that the impact of restrictions related to the reserve has not thus far been noteworthy on regional development. In the last 10 years (2004-2013), six times more lodging facilities have been constructed in remote rural areas with reserves than the Estonian average and over 1.5 times more than in other remote rural areas.¹⁰⁷

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 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**

Agriculture makes up the most important part of the primary sector in Saare County. The number of agricultural households has decreased nearly fourfold in the last decade, but the amount of agricultural land available for use has increased by close to 6,000 hectares. Livestock farming and crop farming are dominant. In livestock farming, the share of beef cattle and sheep has increased, which is related to the payment of EU support for management of semi-natural communities and organic production.¹⁰⁸

Important changes have taken place in Hiiumaa over the decade – whereas in 2006 there were dairies, beef, pork and crop farming companies here¹⁰⁹, in 2009, the pork production was ended and dairy production died out, to be supplanted by meat production.¹¹⁰ Over the decade, the dairy herd has halved, while the number of beef cattle has increased by the same amount.¹¹¹ Plus, the purpose of the cropland used has changed – in the period 2005-2010, the area of

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¹⁰⁵ [http://saared.ee/?page_id=754](http://saared.ee/?page_id=754)
farmland has decreased by approximately 3000 hectares, but the area of permanent grassland has increased by about 5,000 ha.112

On Vormsi Island, agriculture is one of the main areas of activity113, but its development into an independent sector of the economy is quite complicated.114 As of 2009, there was 1,258 hectares of land in agricultural use in Vormsi Island (14% of the island’s area), of which only 15 hectares was planted with crops.115 The island lacks the fertile soil necessary for crop production and thus animal husbandry is the main agricultural activity (raising beef cattle and sheep). 116

The main subsidies for agriculture are channelled through the Agricultural Registers and Information Board, which supports both crop farming and animal husbandry. The goals of the subsidies in the crop farming field is to compensate additional expenditures caused by the particularities of agricultural production and compensation of expenses on management of land for preserving fertility. A goal is also to improve the agricultural producers’ environmental awareness, and to help preserve semi-natural communities etc.117

The animal husbandry subsidies are aimed mainly at people engaged in agricultural activities who raise cattle, suckler cows or sheep and/or who have a milk quota. With the help of investment support, the buildings necessary for beef cattle, pork, sheep, goat, horse and poultry farming; feed storage facilities can be built and renovated and necessary equipment purchased.118

One of the most important projects in agriculture was the KNOWSHEEP project carried out in 2011-2013 in the framework of the Interreg IV. The KNOWSHEEP project sought to facilitate the collective success and sustainability of the sheep industry on the Estonian and Finnish Baltic islands across the value chain, including production, processing and marketing of sheep products (meat, milk, wool, skin). The project aimed to study the viability of local processing as a way to increase sheep farming and production as an economic activity. A healthy sheep industry adds value to the local archipelago living environment by creating jobs in processing, marketing and tourism. It also influences the preservation of biotopes and supports biodiversity.119 As the end result of the project, the volume “Traditsiooniline lambakasvatus Eesti ja Soome rannikualadel ning saarel” (Traditional sheep farming in Estonian and Finnish coastal areas and islands) was published.

- Forestry

Cut volumes remained around 150,000-300,000 m$^3$ on Saaremaa, but by 2010, they had close to doubled. In addition, volumes of afforestation through sowing and planting had grown, although they remained under 10% of the area of the cuts.120

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114 http://eestielu.delfi.ee/laanemaal/elu/pollumajandustootmise-olu-kord-vormsiid;id=43898619
117 http://www.pria.ee/et/toetused/valdkond/taimekasvatus/
118 http://www.pria.ee/et/toetused/valdkond/loomakasvatus/
In Hiiumaa, the amount of state forest felled has risen consistently, close to doubling, while the private forest cut fell from 2007 but attained the highest mark for the decade in 2010. The amount felled started dropping again.\(^{121}\)

On Vormsi, forestry is the most important source of income besides tourism. As of 2011, 65-67% of the island is covered with forest, making up about 6,000 hectares.\(^{122}\) The amount of forest managed by the state is 6-7%, and most of the forest is private.\(^{123}\)

Forestry related projects are financed in the framework of the Environmental Investment Centre’s forestry programme. The activities supported are:\(^{124}\)

- Protection of forest ecosystems;
- Management and renewal of forests;
- Silvology, education and information services;
- Hunting.

**Fishing**

Fishing has been one of the principal areas of activity on Saaremaa throughout history.\(^{125}\) Over the years, the number of professional coastal fishermen has gradually increased. In 2009, 228 fishing licences were issued but in 2003, there were 238 holders of the licences. The quantity of fish caught by professional fishermen is low, due to the greater abundance of seals and cormorants. In addition, red seaweeds is also harvested on Saaremaa. The volumes for red seaweeds have dropped due to the market situation.\(^{126}\)

The Hiiumaa fishery sector includes coastal fishing, deep-sea fishing and aquaculture. In 2005-2007, the catch was poor, but in 2008, they started rising again.\(^{127}\) 2003 was very positive for fishing. Quotas dropped, demand grew on fur farms for feed and fish meal and the price of fish rose. During the decade, turnover and value added have posted records.\(^{128}\)

Vormsi has traditionally been engaged in fishing as a livelihood but today most of the fishing is for own consumption. Since 2007, some professional fishermen have also been registered.\(^{129}\)

Fishing-related projects are financed in the framework of the Environmental Investment Centre’s fisheries programme. The supporting activities are divided into four sub-areas:

- Fishing studies;
- Improving the ecological state of aquatic life;
- Fishing-related development projects;


\(^{122}\) http://eestielu.delfi.ee/laanemaa/elu/vormsi-metsade-majandamisest?id=43904593


\(^{124}\) https://www.kik.ee/et/elusloodus/toetused-2007-2013/metsandus


• Protection and oversight of fishing stocks

Projects initiated in 2012 included the INTERREG IIIA programme project “Vakka-Soome ja Väinamerė jūtkusuutliku kalamarjanduose arengukava” (Development plan for sustainable fisheries management in Vakka-Suomi and Väinameri Sea). In addition to preparing the development plan, an added value is the experiences of the Finnish and Estonian participants in the project regarding practical cooperation, exchange of information and preparation of development plans as well.

There are no studies that have examined whether designation as a biosphere reserve has influenced the frequency of its activities, also what effect have they had on the economy and ecology of the biosphere reserve, and on its biodiversity.

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

The islands of western Estonia are quite isolated from the mainland, as a result of which enterprise is a key value for local communities. This creates jobs, which is an important migration factor and various benefits that islands would not otherwise have due to isolation and small population size. For example, thanks to tourism, Hiiumaa has high-quality trade and many services that it would not otherwise be able to maintain due to the low population size. The marketing and image campaigns aimed at tourists also have an impact on potential permanent inhabitants, which in the long run could impact the declining population trend.

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

(Describe the methods, indicators).

The most effective measures are undoubtedly active distribution of information and various support programmes, which help companies transition to environmentally greener technologies, contribute to small business and marketing of local commodities, purchase equipment for preserving semi-natural communities, and so on. Unfortunately, management of semi-natural communities is not economically rational in today’s society and the fate of the semi-natural communities depends on state assistance measures.

See also the response in 4.4.

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?

Since 2008, the Saaremaa Päike (Saaremaa Sun) series of youth enterprise promotion events has been held, designed to incite interest among younger people in Saare County’s economic development prospects and encourage students to be creative and enterprising. A special topic in 2015 was the green/sustainable ethos.

Since 2010, SA Saaremaa Arenduskeskus organizes the SaareMaaPäevad festival, which introduces the county as a developing and entrepreneurial active region. The goal is to encourage both potential and current business people and young people; to bring together policy planners in the region, local government employees and opinion leaders to increase

130 https://www.kik.ee/et/elusloodus/toetused-2007-2013/kalandus
131 http://saared.ee/?page_id=120
133 http://www.sasak.ee/Saaremaa-Paike-
understanding and support for enterprise and entrepreneurial developments. Various conferences and autumn fairs are held, among much else.\footnote{134}

The main goal of the “Building up Availability of SME Internationalisation Services” project financed in the framework of Interreg IV was to look for ways of supporting internationalization of small and medium-sized companies as often expanding operating activity to markets abroad is particularly challenging for SMEs. Another important goal is to increase availability of public business services for SMEs at the local level.\footnote{135}

In 2013, a pan-Estonian project was initiated – “Maale elama” (Move to the Countryside) – designed to change the view of living in the countryside in a more aware and positive direction and thereby to encourage a back-to-the-land trend. The 2015 Maale elama fair was subtitled “Move to the countryside to start a business”. In the course of the project, a website on business opportunities in Hiiumaa, Lääne County and Saare County was developed.\footnote{136}

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?

A very important step in the direction of sustainable development was taken with the approval of renewable energy action plans in Hiiumaa and Saaremaa. The main goal of these development plans is to reduce CO$_2$ emissions by 20% compared to 2005 levels. The development plans analyze energy use in the two island counties and propose methods of reducing the CO$_2$ emissions.\footnote{137}  \footnote{138}

The Hiiumaa Roheline Märk label was developed in Hiiu County and awarded to products and product groups or services obtained as a result of sustainable management that values and enhances the value of local nature or human resources, traditional skills and local culture. Hiiumaa Roheline Märk was started in 1995 by the West Estonian biosphere reserve.\footnote{139} In 2015, there were eight new label recipients.\footnote{140}

On Saaremaa, the quality label “Saaremaa Ehtne toode” (Genuine Saaremaa Product) was issued; it helps value local producers and local food. The users of the label are mainly food producers, but there are a few service providers among them, too. As of 2015, there were a total 42 label recipients.\footnote{141}

The BPA has a number organic agriculture companies whose products have been awarded a Mahemärk (Organic Label) showing that they were produced and processed in line with ecological rules. One of the biggest Mahemärk companies is Saaremaa Lihatööstus meat plant.\footnote{142}

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.

\footnotetext[134]{http://www.sasak.ee/SaareMaaPaevad}
\footnotetext[135]{http://www.sasak.ee/BASIS-projekt-2011-2013}
\footnotetext[136]{http://maale-elama.ee/}
\footnotetext[137]{Hiiumaa 2020: Taastuvenergia tegevuskava. Hiiumaa Omavalitsuste Liit, 2012.}
\footnotetext[138]{Saaremaa Säästva energia tegevuskava (ISEAP) 2012-2020. Hendrikson & KO, 2012}
\footnotetext[139]{http://tuuru.kovtp.ee/uldinfo}
\footnotetext[140]{http://tuuru.kovtp.ee/margikandjad}
\footnotetext[141]{http://www.saartehaal.ee/2015/05/20/saaremaa-kvaliteedimargi-kandjaid-on-juba-liigi-poolsada-fotod/}
\footnotetext[142]{http://www.roheline24.ee/et/tarbimisjuhised/margised}
There are no major changes in cultural values in the West Estonian Archipelago Biosphere Reserve. The only thing that can be brought out is that traditional culture is being given more due and that there is an increased number of publications and events devoted to culture. These are dealt with in 2.3.5 and 2.3.7.

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?

Business education institutions and support structures have a direct impact on the region's economic environment:

- **Vocational schools**

Kuressaare Vocational School plays an important part in training the county’s workforce. The school has over 45 curricula. The selection of curricula is constantly adapted to the needs of the county’s economy. Tourism and recreational craft construction related specialities offer many jobs and play an important role in the county today. In 2014, there were about 870 students enrolled, plus about 650 students in adult in-service training and re-training.\(^\text{143}\)

Hiiumaa Vocational School offers 15 programmes, of which the most important ones from the standpoint of the county and the region are nature (such as landscape construction and nature tourism), restoration of timber and stone buildings and marina specialists. In 2009, 194 people studied at the vocational school in 12 different programmes. The school also offers in-service training, which broaden the possibilities for adults to pursue continuing education in the region. Some 629 students took part in in-service training in 2008.\(^\text{144}\)

- **Universities**

The purpose of Tallinn University of Technology’s Kuressaare College is to offer formal education and refresher courses in fields needed by the region and development activity in Saaremaa, Western Estonia and Estonia’s islands. The number of students is over 200. The college enables professional higher education in three specialties, all of which are related to the county's economic profile: tourism and food services industry, small business and recreational craft construction. The recreational craft construction curriculum is the only one of its kind in Estonia and Kuressaare College has a key role in promoting it.

- **Other support structures**

The main public sector or PPP support structures for the BPA are the county development centres (SA Saaremaa Arenduskeskus and Hiiumaal SA Tuuru), Leader county action groups (MTÜ Saarte Koostöökogu and MTÜ Hiidlaste Koostöökogu in Hiiumaa) and local fishery developers (MTÜ Hiukala and MTÜ Saarte Kalandus).

\(^{143}\) [http://www.ametikool.ee/](http://www.ametikool.ee/)

In addition, many projects have been carried out in the BPA for improving well-being in the community. The following are a few of the most important examples.

- In 2007-2013, Hiiumaa Vocational School took part in the “Leonardo da Vinci” lifelong learning programme, aimed at promoting vocational education and training in Europe. The programme is intended to increase the quality of the cooperation between training institutions and labour market participants, improve the mobility of participants in primary vocational education and continuing education and promote the spread of innovative experiences in the field of cyber education.145

- In 2009-2012, Hiiu County Government carried out in Hiiumaa the project “NEW BRIDGES: Elukvaliteedi tugevdamine lähiti parere linna ja maa koosmõju juhtimise” (Strengthening quality of life through better management of the interaction between city and countryside), which had 12 partners from eight countries. The objectives were to improve the management of the interaction of city and countryside, involve people and interest groups in the regional planning process and raise the attractiveness and competitiveness of urban regions. As outputs of the project, the questionnaire “Hiiumaa ja hiidlane” (“Hiiumaa and Hiiumaa islanders” was prepared and various printed matter was published.146

- In 2010-2013, the EU project VIRTU was carried out, in the framework of which modern ICT means were used to create new innovative service models that would allow the elderly, their relatives, local government and healthcare and social welfare employees to communicate with others without leaving home.147

- In the framework of the Erasmus+ programme, the project RECORDI aimed to improve the living and economic environment of coastal periphery through in-depth use of cultural heritage in the ecotourism sector. The curriculum developed is being found in the curriculum groups at Hiiumaa VS.148

- Kuressaare VS has successfully carried out many different projects, such as “Green Footprint”, the objective of which was to learn principles for green construction and ways of using renewable energy sources to reduce the ecological footprint. In addition, “Host With the Most”, the objective of which was to help low-qualification employees and job-seekers as well as people active in small business to develop their knowledge and gain new skills to be competitive.149

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

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?

The implementation and funding of different projects to support enterprise had a positive impact. Developing tourism is very important as this will also develop the local region as a
living environment. Information events that support living on the periphery are very important (such as the initiative “Maale elama”), as the main problem in the BPA is emigration of the population.

The economic crisis also had a negative impact, influencing all of Estonia. The negative population growth and high level of emigration are also large problems.

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.

National environmental monitoring refers to monitoring funded from the state budget and international cooperation programmes.150 The general coordinator of environmental monitoring is the Ministry of the Environment. In 2013, the Environmental Agency was established through restructuring of the Environmental Information centre (KTK) and the Estonian Meteorology and Hydrology Institute (EMHI). The Environmental Agency is responsible for, in cooperation with the Mo, organizing and developing the national environmental monitoring programme, gathering and releasing monitoring data, and on the basis of the data, distributing generalized information (releasing information on the website, electronic and paper publications). With the creation of the Environmental Agency in 2013, a number of changes took place in the execution of the programmes and a number of activities previously in the remit of the ministry were handed off to the Environmental Agency.

In addition to the Environmental Agency, a number of other organizations carry out national monitoring. For example, the University of Tartu’s EMI and OÜ Eesti Geoloogiakeskus carry out monitoring of coasts and groundwater.151

Universities also conduct research. The University of Life Sciences has organized a number of natural environment and cultural studies. In the period 2011-2012, for instance, it carried out a comprehensive applied nature conservation study on Hiiumaa’s small offshore islands that investigated communities of birds, plants and invertebrates on islands and the ecological interconnections between landscape and habitats (“Meresaarte linnu-, taim- ja selgrootute kooslused ning maastiku ja elupaikade omavaheliste ökoloogiliste seoste kompleksne uuring looduskaitserakenduslikel eesmärkidel”). In addition, Saaremaa is a research area for the University of Tartu macro-ecology working group. Alvars are studied by the Aveliina Helmi working group, which also carried out the project Life to Alvars, designed to restore 2,500 hectares of extant alvars on the islands of Saaremaa, Muhu and Hiiumaa, Lääne County and Pärnu County. The Tallinn University ecology department investigated principles governing beach and coastal developments against the natural background and in conditions of human impacts (“Randade ja rannikute arengute seaduspärasuste uurimine loodusliku fooni ja inimmõju tingimustes”).

150 http://seire.keskkonnainfo.ee/index.php?option=com_content&view=article&id=894&Itemid=146
Each year, the Environmental Board orders studies and inventories on protected areas. The State Forest Management Centre has ordered nationwide studies (such as an extensive study on the capercaillie, a bird).

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).

National monitoring is conducted in the framework of the following monitoring programmes in the BPA: living nature diversity and landscape monitoring, monitoring of inland bodies of water, groundwater monitoring, radiation monitoring, marine monitoring, meteorological monitoring, ambient air monitoring and integrated monitoring.

- **The living nature diversity and landscape monitoring** sub-programme is the most extensive and diverse of all of the sub-programmes, covering monitoring of species, communities and landscapes. A total of 40 area programmes have been part of the sub-programme since 1994. The goal of the living nature diversity and landscapes sub-programme is to determine, track and forecast changes in abundance and range of species and development of landscapes, based on the information gathered in the living and lifeless nature monitoring. The gathered data and analysis result in reference data for implementation of nature and environmental conservation measures and planning economic and construction activities for local government, individuals and state-level decision makers.\(^{152}\)

- The sub-programme for **monitoring inland bodies of water** can be divided in number of ways: pursuant to the framework directive, into overview, operational and research monitoring; on the basis of water bodies; monitoring of water courses (rivers) and lakes etc. Both the river and lake monitoring covers hydrochemical, hydromorphological and hydrobiological studies. Datasets gathered in the course of hydrological, hydrochemical and hydrobiological monitoring of inland bodies of water allows the status of Estonian rivers and lakes to be evaluated, changes tracked and projected and the causal connections with human activity and natural processes analyzed. The objective of monitoring of inland bodies of water is, through the above means, to guide the development and implementation of measures for the protection of aquatic life and the living environment, determine and prevent potential threats, give necessary background information for bodies of water and for assessing the environmental impact buildings constructed or to be constructed along bodies of water and planning economic and recreational activity.\(^{153}\)

- **National monitoring of groundwater** was initiated to determine Estonian groundwater reserves and evaluate the quality of groundwater. On the basis of the data gathered, the sustainable consumption of groundwater can be planned to prevent exhaustion of reserves; it also makes it possible to evaluate groundwater quality and suitability as drinking water. Studies carried out in the framework of the monitoring programme also allow for determination of polluted areas, assessment of the status of groundwater in

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\(^{152}\) [http://seire.keskkonnainfo.ee/index.php?option=com_content&view=article&id=628&Itemid=172]

polluted areas and areas prone to pollution and, pursuant to the results, plan implementation of protection measures.\(^{154}\)

- **The marine monitoring** sub-programme encompasses monitoring of coastal waters, open-sea monitoring, coastal monitoring and remote monitoring. The main function of the monitoring of coastal waters is to track the water bodies in coastal marine areas and the impact of human activity on it. Monitoring of sea coasts includes measurement of changes taking place on monitoring profiles and, on the basis of the changes, description of the coastal processes, which should be taken into account e.g. in the case of construction of ports, breakwaters and other shoreline infrastructure or management of beaches as well as in the case of housing development. To detect and track cyanobacteria (blue-green algae) blooms and map the phytobenthos, remote monitoring was added to the programme in 2005. Remote monitoring methods have been used to track the extent of changes in reedbeds along sea coasts.\(^{155}\)

- **Monitoring of ionizing radiation** covers monitoring of radioactivity in all environmental spheres for the purpose of protecting people and living nature from the deleterious effects of ionizing radiation.\(^{156}\)

- **Meteorological and hydrological monitoring** covers the conducting of meteorological and hydrological measurements, used to gather data on air temperature, precipitation, wind speed and velocity, water levels and flow rates in bodies of water and a number of other indicators for weather, climate and bodies of water and wetlands. The data are gathered, organized, processed and transmitted by the Environmental Agency’s State Weather Service and hydrology department.

- **The ambient air monitoring** sub-programme covers the monitoring of ambient air, chemical content of precipitation, and bioindicational assessment of heavy metal precipitation. The purpose of the sub-programme is to determine and track the chemical composition in ambient air and precipitations, conformity to the established limits and changes for the purpose of determining, forecasting and preventing potential harm to human health, living environment, infrastructure and natural landscapes and communities.\(^{157}\)

- The objective of integrated monitoring is the long-term monitoring of the biological, hydrological, chemical and physical indicators of various smaller ecosystems and hydrographical basins to determine the impact of natural factors, climate change and air pollution and other human activity on physical processes (nitrogen cycle, carbon cycle etc). The results are compared to indicators for the relevant monitoring stations in other European countries, which allows the monitoring results to be generalized more broadly and similar trends to be determined. The monitoring data are sent to the international database. The BPA has one of two monitoring stations that are part of the Estonian international network – Vilsandi monitoring station.\(^{158}\)

The most important studies conducted in the BPA are treated in 2.4.6. An updated list of main bibliographic references is in Annex 6.

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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.

In addition, many projects have been carried out in the BPA for improving well-being in the community.

Currently the RECORDI project is under way, gathering information on coastal living skills passed on from one generation to the next, such as customs, techniques, items, artistic expression and values. There is both a material and spiritual heritage component. As a result of the project, Hiiu Vocational School will put together an ecotourism curriculum, 10 short video films on the best practices in each area and a brochure, explaining the principles, giving recommendations and presenting best practices.159

The HISTCAPE project was very successful – successful strategies for sustainable management of cultural heritage and landscapes over Europe were exchanged. As a result of the project, a volume was published: “Kultuuripärand, maastik ja maaelu areng. Head tavad, metodoloogia, poliitikasoovitused ja juhised maakogukondadele”160.

Estonian island traditional culture festivals are held on the islands within the BPA, the principle being to study, develop and demonstrate traditional Estonian island cultures.161 In addition, Muhu Island hosts an annual heritage skills week where the knowledge and skills of Estonians’ forebears is passed on.162

Organic farming is dealt with in greater detail in chapter 2.3.6.

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

Two vocational schools are located in the BPA: on Hiiumaa and Saaremaa Island. On Hiiumaa, it is possible to study environmental protection (sustainable use of the natural environment and natural resources).163 In addition, Saaremaa has a Tallinn University of Technology college.164 These schools are treated in detail in 5.9.

Hiiumaa has two nature centres that are engaged in nature education activities. Palade Nature Education Centre and the State Forest Management Centre’s Ristna nature centre. The main programme at Palade is “Hiiumaa landscapes”, which gives an overview of the island’s geological history, various surface features, marine life and plant and animal communities. The nature centre has an environment lab, where a Science Club started operating in 2013. The

http://www.academia.edu/10386935/Kultuurip%C3%A4rand_maastik Ja maaelu areng_Ajaloolised ja looduslikud_v%C3%A4%C3%A4rtused_Head tavad_metodoloogia_politikasoovitused Ja juhised maakogukondadele160
http://www.kultuur.info/syndmus/x-eesti-saarte-parimuspaevad/
http://www.muhumuseum.ee/moodul.php?moodul=CMS&Komponent=Lehed&id=121
http://www.ttu.ee/asutused/kuressaare-kolledz/
various workshops organized by the club (water treatment, measurement of noise pollution etc) introduces children to the world they live in. Also in Palade, a mineral study building was established, which is directly tied to Hiiumaa’s geology. In addition, various projects are held in the centre: fungi exhibitions, nature nights, environmental camps etc. Besides the Palade centre’s Hiiumaa landscapes programme, introduction to the nature of the Man and the Biosphere programme is also important. The nature centre engages in cooperation with Soera Farm Museum, where nature education gets an added cultural and historical layer – an important part of the ideology of the BPA.

The State Forest Management Centre’s Ristna nature centre provides information on natural features of Hiiumaa and holiday and recreational possibilities. The nature centre organizes free campaign programmes for general educational schools and preschools as well as nature education programmes for a fee. In addition, visitors can see exhibitions and the centre's collection of information.¹⁶⁵

Saaremaa has many nature centres: State Forest Management Centre’s Mustjala nature centre, Viidumäe nature centre, Saaremaa Ühisgümnaasium environmental education centre and the State Forest Management Centre’s Mändjala nature house. The State Forest Management Centre’s Mustjala Centre has nature-themed exhibits and nature-related literature. It also offers various programmes and interpretive trails that introduce local nature. The nature centre organizes nature education programmes and forest and nature-themed events for various target groups.¹⁶⁶

Viidumäe nature centre features a main exhibition and an interpretive trail nearby.¹⁶⁷ State Forest Management Centre’s Mändjala nature house introduces nature in the protected area and carries out nature education programmes and hikes.¹⁶⁸ Saaremaa Ühisgümnaasium’s environmental education centre offers various nature clubs for schoolchildren (e.g. biology, nature discovery). The environmental education centre lab allows visitors to learn about both living and inanimate nature and take part in workshops. It also hosts a number of educational programmes and study days for schoolchildren and adults. For instance, spring brings a programme for young people and their parents – “Saaremaa’s vegetation and semi-natural communities”, which is a gateway to better knowledge about the local nature.

The Environmental Board’s environmental education department organizes and carries out free educational programmes for educational institutions and target groups on reserves and special conservation areas in the Hiiu-Lääne-Saare region. The Saaremaa Museum organizes various environmental education programmes for various age groups.¹⁶⁹

Changes in the environmental education field in the last 10 years have mainly pertained to availability of information. Thanks to various events (such as collective activity days and volunteering), brochures and information sheets, programmes, website and nature centres, people have easier access to information on the natural world around them. As the information has begun spreading more widely, people have become more environmentally aware and due to this, their behaviour has been more conservation-minded.

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

¹⁶⁵ http://www.keskkonnaharidus.ee/centre/rmk-ristna-looduskeskus/
¹⁶⁶ http://www.keskkonnaharidus.ee/centre/rmk-mustjala-looduskeskus/
¹⁶⁷ http://www.keskkonnaharidus.ee/centre/viidumae-looduskeskus-keskkonnaamet/
¹⁶⁸ http://www.keskkonnaharidus.ee/centre/rmk-mandjala-loodusmaja/
¹⁶⁹ http://www.keskkonnaharidus.ee/
The number of participants in the State Forest Management Centre’s nature education programmes has doubled over the decade, reaching the highest level in 2013 (4,333 participants). The activity in the field of nature education can thus be deemed good.

See also the response in 4.4.

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

The BPA management structure is treated in 2.3. The implementation of the programme is organized by the Environmental Board and the Environmental Board organizes meetings and seminars as needed for fulfilling the BPA’s action plan. The BPA specialist plays an important role in the BPA coordination network. This specialist is responsible for communication both in and out of house in the field of use of the environment. The specialist has a coordinating role. In his or her work, the specialist relies on the recommendations of the BPA Council. The BPA Council meets twice a year for working meetings where BPA developments and development prospects are discussed.

To exchange information with local communities, environmental education has undergone significant development (covered in detail in 6.4), and various events are held to introduce BPA’s activities (more in 2.3.3) and ways of learning about the BPA online have been developed at [http://www.keskkonnaamet.ee/organistatsioon/unesco/](http://www.keskkonnaamet.ee/organistatsioon/unesco/), with the MAB newsletter available at [http://arhi.pelagis.eu/category/unesco_mab/](http://arhi.pelagis.eu/category/unesco_mab/).

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

The BPA does not have a separate website, but the Environmental Board website has information on the BPA. [http://www.keskkonnaamet.ee/organistatsioon/unesco/](http://www.keskkonnaamet.ee/organistatsioon/unesco/).

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

The MAB newsletter is located at the address [http://arhi.pelagis.eu/category/unesco_mab/](http://arhi.pelagis.eu/category/unesco_mab/). The first entry is from 2014 and there are five entries in all.

In addition, a UNESCO National Committee newsletter is published, at [http://www.unesco.ee/uudiskirjad/](http://www.unesco.ee/uudiskirjad/).

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

BPA does not belong to a social network.

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

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

BPA contributes to the Network of Biosphere Reserves. In 2011, Estonia was selected as member of the MAB programme coordination council and BPA took part in the 25th session of the UNESCO MAB ICC. In addition, BPA has taken part in a number of regular BPA conferences, including organizing the 2013 meeting on Saaremaa and Hiiumaa and, in 2015, a regular UNESCO MAB programme conference in Haapsalu, western Estonia, with excursions.
to Saaremaa, Hiiumaa and Vormsi. A collection of presentations from the 2013 conference was published as “Sustainable Management in Island and Coastal Biosphere Reserves”.170

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

Cooperation has taken place between the Archipelago Sea and West Estonian BPAs since 1994. In 2009, both the Estonian and Finnish BPAs got a new administrator, and in 2010, a meeting was held on Saaremaa, where representatives met each other and gave an overview of the interim developments in the BPA and biosphere area-related plans.171

Cooperation also takes place with Latvia’s North Vidzeme Biosphere Reserve. As part of the Interreg project “Coastal sustainability as a challenge,” the Latvian BPA representatives met the Estonian BPA.172 In 2005-2007, there was close cooperation with several German biosphere reserves in Rügen and Schleswig-Holstein.

More extensive contacts with other biosphere reserves have taken place at EuroMAB conferences. In 2015, Estonia organized a conference in Haapsalu. Over 100 nature experts from 25 countries ranging from Canada to Israel took part in the conference. As a result, many participants recognized Estonia’s contribution into maintaining species-rich meadows. In addition, Vormsi Rural Municipality’s modern waste facilities were praised – these have containers for ordinary household waste, recyclables and hazardous waste.173

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

Cooperation with other biosphere reserves is, above all, beneficial with regard to sharing experiences. A network the size of UNESCO MAB draws its specialists nationwide; their experiences, opinions and ideas are a valuable resource. As the last EuroMAB conference in 2015 showed, there is quite a bit to learn from each other and use as an example. At a joint discussion, it was found that labelling is not the most important field on BPAs and distributing information on the BPA but rather efforts to make local residents aware of the outcomes of their decisions and continued striving to find solutions to preserve Estonia’s valuable landscapes.174

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?

Estonia continues to participate actively in the conferences and meetings organized in the framework of the MAB programme and making its contribution toward achieving the objectives of the programme. Estonia’s BPA is highly recognized precisely for management and restoration of the species-rich meadows and it intends to contribute to these efforts in future as well constantly developing its knowledge in this field and sharing experiences with other biosphere reserves. The Environmental Board contributes in diverse ways to implementing the BPA and will continue to introduce the principles of the BPA to local inhabitants and tourists.

170 http://unesdoc.unesco.org/images/0022/002272/227212e.pdf
173 http://online.le.ee/2015/05/26/rootsi-looduseksperdid-laane-eesti-biosfaar-on-kadestamisvaarne-eeskuju/
174 http://online.le.ee/2015/05/26/rootsi-looduseksperdid-laane-eesti-biosfaar-on-kadestamisvaarne-eeskuju/
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 favoured as being most effective?

It is very important to monitor the BPA’s natural environment; this takes place regularly at the national level. Cooperation with research institutes and other biosphere reserves is also important. To achieve the BPA’s objectives, it is important to engage local communities, and a number of events and projects have been carried out to this end. Much has been contributed to the study of heritage culture and its use in biosphere management.

From the negative standpoint, the halt in BPA’s management in connection with the change in managing authority (for more, see 2.2.7) can be cited.

6.8 Other comments/observations from a biosphere reserve perspective.

None.

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 dependent 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?

The Environmental Board as a government institution is responsible for the coordination and logistics of the work of the BPA, and it exercises this function together with the cooperation partners. The Environmental Board has a BPA specialist and BPA Council for this purpose. The members of the Council meet at least twice a year.

A development plan and action plan have been compiled; these are implemented in cooperation with partners. This year, the Environmental Board’s Hiiu-Saare-Lääne regional office introduced the position of BPA specialist. The Environmental Board, as a government institution, issues environmental use permits, develops environmental education and serves as administrator of protected areas.

As regards information services and consultation, the Environmental Board utilizes student programmes and holds information days for local governments, and nature evenings for the general public. Courses called summer and winter universities are held in the BPA – a setting for in-depth discussion of sustainable development opportunities.

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 BPA specialist (based at the Hiiu-Saare-Lääne regional office starting this year) plays an important role in the BPA coordination network. This specialist is responsible for communication with other government institutions, local governments, the business community, non-profit associations and educational institutions in the field of use of the environment. The specialist has a coordinating role. The specialist draws on the recommendations of the BPA Council.
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.).

No indigenous people has been identified in Estonia as requiring separate attention. Ethnic groups form associations for carrying out activities: for example, a non-profit called MTÜ Vormsi Veri (among others) has been formed for gathering historical materials on the coastal Swedish ethnic group.

To ensure local initiatives related to the environment, grants can be applied for from the Cultural Endowment of Estonia or Leader groups in the framework of the Rural Development Plan, or directly from the Environmental Investment Centre for environment-related activities.

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

Decision-making and conflict resolution in regard to use of the natural resources and environment proceeds from legislation in the field of the environment, which sets out, where necessary, environmental impact assessments, notification of the public, familiarizing interested parties with proceedings etc.

One of the biggest conflicts in the BPA is the opposition of local residents to wind farms. In 2009, the Hiiu County thematic plan “Wind Energy” was initiated based on the Estonia 2030+ national plan. The thematic plan calls for the share of renewable energy to be increased to 20% by 2020.

Even though the thematic plan has undergone a strategic environmental impact assessment, which has been approved by the Environmental Board, and the entire proceedings respond to established requirements, some local inhabitants remain opposed to installation of wind turbines. The proposals of local inhabitants have been taken into consideration throughout the process and corrections have been introduced into the thematic plan based on their proposals.

The county plan for the marine area adjoining Hiiu County and a strategic environment impact assessment have been initiated. One possibility envisioned is to install wind turbines in offshore areas.

Pursuant to valid legislation, opposition proceedings can be filed in court within one month of the establishment of the thematic plan.

Another significant conflict concerns the islands and large game animals. Namely, the islands have valuable semi-natural areas kept open by grazing herd animals there: sheep, cattle and horses. The islands are enclosed areas surrounded by sea, of course, and the population of large game increases in good conditions, becoming a threat to livestock farmers. The livestock fall easy prey to animals such as wolves, even if there is enough “food” in the forest.

Information and instructional events are held for the farmers as to how to protect their herds against wolves. In 2009-2011, with support from the Interreg project, it was possible to exchange experience with other sheep farming regions to obtain new “wolf-proof” animal husbandry ideas. The monitoring system undoubtedly will have to be improved to ascertain and precisely regulate the number of large predators.

The Environmental Board and BPA specialist take part in discussions, prepare explanations and help to order additional research.
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?

The main areas of activity related to use of resources are the following:

- Ambient air pollution – local boiler plants and smaller production enterprises – the process of permits is public, if necessary ex ante assessments or environmental impact assessments are prepared.

- Special use of water – consumption of groundwater of 5 cu m per day or more, renewal of bodies of water, demolition of barrages, proceedings for water special use permits is the same.

- Extraction of natural resources - requires comprehensive geological studies, which is an separate operation requiring environmental permit. The proceedings on mining permit are public and the Ministry of the Environment’s natural resources committee is also involved in the proceedings. If necessary, an environmental impact assessment is prepared. The current mines are obliged to prepare a project, which is coordinated at the Environmental Board; the proceedings are public.

- Integrated environmental permits are environmental permits for larger industrial enterprises and for agricultural enterprises. In the process, the companies’ use of the environment undergoes integrated analysis’.

- Granting hunting grounds into use and broader regulation of hunting takes place through county hunting councils.

- Coordinating fishing and catching of crayfish

In addition, Environmental Board approval is obligatory for establishment of all plans. Decreases in the building exclusion zone for coastal protection are an exception; the Environmental Board assesses the need for such an exception in each case. In the case of protected natural features, it is specified which activities require the consent of the conservation unit administrator.

The Environmental Board commissions various works from the State Forest Management Centre and private owners for maintenance of public land and issues public funds for performing the work.

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

The obligations and functions of administrative authorities are described with sufficient detail in legal acts. If misunderstandings arise, the provisions of legal acts take precedence.

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?

Any conflicts that arise are resolved according to legal procedure. Possible measures include filling a challenge to a decision, hearing out the parties, judicial proceedings etc.
7.5 Updated information about the representation and consultation of local communities and their participation in the life of the biosphere reserve:

As regards representation and consultation of local communities, the Environmental Board uses student programmes, information days for local governments, and nature evenings for the general public. Courses called summer and winter universities are held in the BPA – a setting for in-depth discussion of sustainable solutions.

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).

Local communities are not uniformly organized, there are some localities where people are better organized. In preparation of the BPA development plan and action plan, interested parties were invited to meetings and all suggestions were considered. As the people on the cooperation council are members of various umbrella organizations, it is possible to factor in the interests and wishes of the communities.

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

They are mainly non-profit associations.

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

No procedures have been drafted for establishing the representative body of local communities, as communities are organized on very different levels and holding elections could cause inequality among representatives.

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

The consultations on preparing the development plan lasted about eight months.

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

The need for consultation depends on the direct impact of the decision-making. Decisions that impact a small number of people do not require consultations; such a case involves notification, where decision-making proceeds directly from legislation. If the decision has very great impact, such as in the case of the opening of a mine, the process can be years long, with consultation taking place with local interest groups, experts and local government.

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.

The Environmental Board, in conjunction with partners and the BPA Council, draws up a five-year action plan. In preparing the action plan, the partners participating on the BPA Council, other government institutions and the public are consulted. The proceedings on preparation of the plan are open to the public.
The action plan is implemented in cooperation with the local community, companies and the public and the success of the implementation depends on the initiative shown by and cooperation from all of the parties.

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.

The Environmental Board, as a government institution, issues environmental use permits, develops environmental education and serves as administrator of protected areas. The Environmental Board is the legal successor of previous coordinator, therefore there are no general changes in zonation compared with the previous report.

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

Starting in 2015, the Environmental Board has a staff position for the West Estonian Archipelago Biosphere Programme Area. A public hiring competition was held to fill the position; 17 applicants took part. Three rounds were held, on the basis of which a suitable candidate was selected.

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

There are no general changes in zonation compared with the previous report. The zonation of the BPA continues to be based on the protection regimes in use in the Estonian nature conservation system, where the core areas are made up of strict nature reserves and special management zones and the buffer zones are made up of limited management zones, special conservation areas, species protection sites and environmental impact assessment areas (at least 50 m around core areas). An overview of the changes to areas by each zone is provided in Table 2.

The Environmental Board as a government institution is responsible for the coordination and logistics of the work of the BPA, which it does in conjunction with the cooperation partners. The Environmental Board has a BPA specialist and BPA Council for this purpose. The West Estonia Archipelago BPA Council is a board of experts at the Environmental Board, made up of the region’s local governments, civic groups and non-profits, including business advocacy organizations and LEADER activity groups, and representatives of higher education and vocational education institutions.

The makeup and operating procedures of the BPA Council are approved by the director general, who is also responsible for dissolving the BPA Council.

The full name of the BPA Council in English is: ADVISORY COUNCIL OF BIOSPHERE PROGRAMME.

The working format of the Council is the meeting, and if necessary, electronic meeting.
The Council’s duties are: providing consultation in preparing the West Estonian Archipelago BPA action plan; providing input for preparation of the plan and evaluating compliance; introducing the principles from the Man and the Biosphere (MAB) programme in the BPA; exchanging and distributing information.

The work of the BPA Council is led by the chairman appointed by the director general.

The (14) members of the Council meet at least twice a year.

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

Management/coordination is adapted to the local situation in consideration of the particularities and existing resources of the BPA. The programme focuses its resources and sets goals for guiding the economic sectors in which “greening” is, in light of the natural and societal conditions in the BPA (including the insular character and the existence of many islets and holms in the territory), the most promising as well as most efficacious in terms of maintaining biodiversity.

The makeup and operating procedures of the BPA Council are approved by the director general, who is also responsible for dissolving the BPA Council.

The full name of the BPA Council in English is: ADVISORY COUNCIL OF BIOSPHERE PROGRAMME.

The working format of the Council is the meeting, and if necessary, electronic meeting.

The Council’s duties are: providing consultation in preparing the West Estonian Archipelago BPA action plan; providing input for preparation of the plan and evaluating compliance; introducing the principles from the Man and the Biosphere (MAB) programme in the BPA; exchanging and distributing information.

The work of the BPA Council is led by the chairman appointed by the director general.

The (15) members of the Council meet at least twice a year.

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

To evaluate the effectiveness of management/coordination, the Environmental Board prepares an annual review of performance of the action plan. The report will be submitted to the programme Council, which shall provide its assessment and, if necessary, issue recommendations for making the activities more efficacious and propose adjustments to the action plan. The report, accompanied by the evaluation and proposals, shall be forwarded to the UNESCO Estonian National Committee and made publicly available at the same time.

7.7 Update on the management/cooperation plan/policy:

The MAB programme promotes domestic and international cooperation in the field of sustainable development. The work of the biosphere network promotes the spread of knowledge of good practices, innovation that supports sustainable development and mutually beneficial forms of cooperation in the islands region and between biosphere areas.

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.
The Environmental Board aims to help local communities see the BPA programme as a beneficial and appealing development opportunity. To do so, the Environmental Board prepares periodic short-term action plans for fulfilling the programme, using proceedings that are open for everyone to participate in. The Environmental Board initiates and supports public events at which both the islands’ permanent and seasonal inhabitants are welcome.

No changes have taken place with regard to stakeholders.

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/cooperation plan defines the strategic objectives and functions necessary for implementation. The Environmental Board, in conjunction with partners and the BPA Council, plans concrete activities toward the objectives in the five-year action plans, which set out measurable target levels with regard to the solution for each objective addressed by the programme. The plan is approved by partners.

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 Environmental Board as a government institution is responsible for the coordination and logistics of the work of the BPA, and it exercises this function together with the cooperation partners. The Environmental Board has a BPA specialist and BPA Council for this purpose. The members of the Council meet at least twice a year.

A development plan and action plan have been compiled; these are implemented in cooperation with partners. This year, the Environmental Board’s Hiiu-Saare-Lääne regional office introduced the position of BPA specialist. The Environmental Board, as a government institution, issues environmental use permits, develops environmental education and serves as administrator of protected areas.

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

Nature conservation and environmental protection measures are not enough to achieve a favourable status of the biosphere. Human economic activity must in general become more sustainable. The main objective of the BPA is to shape its programme area into a pilot area for development of a sustainable economy. The programme focuses its resources and sets goals for guiding the economic sectors in which “greening” is, in light of the natural and societal conditions in the BPA (including the insular character and the existence of many islets and holms in the territory), the most promising as well as most efficacious in terms of maintaining biodiversity. These sectors are energy, agriculture, fisheries, forestry, tourism and education.

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

According to the Nature Conservation Development Plan until 2020, the Environmental Board has prepared this program for the period 2014-2020. The legal basis for the program is "Sustainable Development Act”.

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).
There have been no impediments to implementation of the management/cooperation plan policy.

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 Environmental Board works toward the aim of getting local communities to see the BPA programme as a beneficial and appealing development opportunity, and encouraging them to integrate the objectives and functions of the BPA into their own development documents.

In preparing county/local government development strategies, the consideration is that the programme area will be a pilot area for a sustainable economy. During the period, new county/local government development strategies have been prepared. The principles of the biosphere programme have been incorporated into the Viimsi Municipality Development Strategy for 2011-2025, the Saare County Development Strategy 2020 and Hiiu County Development Strategy 2020+.

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 fulfil 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 fulfils 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)).

In Estonia, the West Estonian Archipelago biosphere reserve that implements the MAB programme was founded by regulation of the Estonian SSR government in 1989 and in 1990, UNESCO declared it an MAB programme area. The BPA is for organizing educational, monitoring and research activities and protection of natural resources and sustainable use. On the BPA, the basic principles for balanced relations between humans and their environment are developed and local development is guided through planning and development activity pursuant to the objectives of the UNESCO MAB programme.

The BPA includes the predominant majority of all Estonian islands, including the largest ones – Saaremaa, Hiiumaa, Muhu and Vormsi. The world’s BPAs were selected both for biogeographical representativeness and natural conservation value. Being pioneering areas for developing sustainable use of the natural environment and natural resources, they are generally settled areas that are in economic use. The islands of western Estonia meet these requirements.

Today’s land use on the islands is extensive. From the standpoint of biodiversity of the West Estonian Archipelago, semi-natural communities – 8% of the territory of the islands – have special importance. Their appearance and values have developed and been preserved thanks to long term sustainable management, taking into account nature.
From the standpoint of preserving biodiversity, the coastal waters within the BPA are also valuable. Indeed, close to 40% of the waters are the habitat type 1110, as listed in Annex 1 to the EU nature directive.

Alongside nature conservation, significant attention has been paid to establishing a sustainable economy that meets natural and societal circumstances. The BPA’s activities focus on developing economically viable green economy models for use of local biological resources, based on local natural and semi-natural (heritage) communities both on land and in the coastal waters, and local positive cultural heritage as regards use of the natural environment and natural resources, also considering the fact that due to insularity, the region’s tolerance of load has to be taken into account more than in some other Estonian region. The success along this front is supported by applied scientific research and development, environment education and community involvement.

Despite the burgeoning urban lifestyles in society, more than in many places in Estonia, Western Estonia’s islands have retained their sustainable traditional culture with regard to use of the natural environment and natural resources, and the patchwork of village landscapes and semi-natural communities. Local natural resources – forest, sea, curative mud, clean environments etc – all figure prominently Future economic development prospects. Thus the BPA is suitable as a pilot area for the green economy in Estonia.

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

A predominant share of Estonia’s semi-natural communities are located on the islands of western Estonia, thus the islands in the MPA have a key role in preserving semi-natural communities and related species diversity. Over ten years, the area of the consistently managed semi-natural communities (SNCs) has increased by about 3,600 ha. In 2015, there are 9,300 hectares of managed SNCs. Each year, about 700-1,000 hectares of semi-natural communities has been restored. A total of 422 species of protected, rare or endangered species have been registered in the BPA, including regionally extinct species such as the European mink and peregrine falcon. The mink is extinct in mainland Estonia, with the American mink have occupied its habitats. An insular population of the Europe mink is taking shape on Hiiumaa, but is not yet sustainable. The core areas of the BPA feature old-growth forests, with high biodiversity, and mire habitats, the mosaic-like nature and abundance of habitats of which offers suitable conditions for very disparate species.

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).

Among the goals set by the BPA is development of a sustainable energy sector, to which end training in the field of use of sustainable of energy sources and use of timber are organized and assistance is provided for founding energy cooperatives. To achieve sustainable agriculture, techniques for managing SNCs are introduced and local food is promoted through competitions, best food product competition etc. Various activities are carried out in the field of sustainable forestry, fishing, tourism, planning and construction etc. The Environmental Board commissions applied research to determine the possibilities for enhancing the value of local resources and determining outcomes in conditions of insularity.

• From 2010-2012, the Act4MyBalticSea project was carried out (supported by INTERREG IVA programme), which was designed to increased the attention paid to clean coastal waters by inhabitants of the islands and coastal areas, holidayers and local governments.
The knowledge gained from the project was used in the “Saare maakonna hajaastuse üksikmajapidamiste reovee käätimisviisiide maharajas”.

• 2010-2013 saw the project “Green Islands,” which was based on mapping and analysis of environmental status and involved observation of waste handling, energy and water resource consumption and waste water treatment issues on Muhu Island and which saw the preparation of a detail map of ground water protection for Muhu Rural Municipality.¹⁷⁵

• In 2012, the project “Vakka-Soome ja Väinamere jätkusuutliku kalamajanduse arengukava” was initiated.

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

The zonation of the West Estonian Archipelago BPA is based on the protection regimes used in the Estonian nature conservation system. The BPA has a total area of 15,183 km². The core areas include habitats of protected, rare and endangered species (including semi-natural communities) and valuable communities not under management (e.g. forests and mires); the biological diversity of this zone is the greatest. The core areas amount to 360.56 km² (table 2). Buffer zones include natural and semi-natural communities with less stringent protection regime, which are very important in forming a buffer for the core areas. Buffer zones amount to 4618.6 km² (table 2). The transition area is made up of the BPA territory and the waters outside the core and buffer zones. Transition zones have a total area of 10205.04 km².

5. Appropriate zonation to serve the three functions

In striving toward its objectives the BPA programme functions in all three zones. In doing so, it adheres to the nature conservation and other restrictions on human activity established in the core areas, buffer zones and transition areas by law. Protection of core areas and buffer zones is governed on the basis of the Nature Conservation Act, with core areas encompassing higher value communities and species habitats, where only uses with a mild and non-harmful impact is allowed (research, educational activities). The protection procedure for these areas is sufficient to ensure that the natural assets and species diversity are preserved. These are predominantly natural areas (such as forests and mires) with few inhabitants. Buffer zones are where the managed portions of the protected zones are zoned, these shield valuable habitats. In addition, buffer zones also include special conservation areas where the only activities allowed are ones that do not harm habitats and species which the area was established to protect. Allowed activities must be ecologically appropriate, have limited human impact, and help to preserve important natural assets and prevent damage to them. Use of the environment in the transition areas is governed by legislation in the field of the environment, which sets out, if necessary, environmental impact assessments, notification of the public, familiarizing interested parties with the procedure etc. Diverse use of the natural environment and natural resources takes place in transition areas.

Different existing zonation: The BPA’s zonation has remained the same. BPA zonation continues to be based on the protection regimes in the Estonian nature conservation system, where the core area is made up of strict nature reserves and special management zones and the buffer zones comprise limited management zones, special conservation areas and species protection sites and environmental impact assessment areas (at least 50 m around core areas).

¹⁷⁵ http://saared.ee/?page_id=162
Transition areas include all other areas. The areas of the zones have changed, and this is treated in greater detail in Part I. (Summary part i).

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 basis for coordinating the BPA and implementing the objectives is the BPA programme for 2014-2020. The implementation of the programme is organized by the Environmental Board, whose field of activity under its statute includes the implementation of national environmental use policy and of programmes and action plans. To support implementation of the BPA programme and involve partners in administration, the Environmental Board may form working groups, committees and a research council.

Broad-based links and cooperation with local communities is ensured by the BPA Council formed by the Environmental Board director general, on which the region’s local government, civic groups and non-profits, including business advocacy organizations and LEADER activity groups, and representatives of higher education and vocational education institutions are invited to participate. The main functions of the BPA Council are to approve the five-year action plans for the programme and if necessary to approve amendments thereto.

To perform the strategic objectives set out in the BPA programme, the Environmental Board, in conjunction with partners and the BPA Council, plans concrete activities in the five-year action plans. The plans cover both the Environmental Board’s and partners’ activities. The funding for the action plans comes from financing sources available for specific activities, based on the partners’ and the Environmental Board’s opportunities.

7. Mechanisms for implementation:

a) Mechanisms to manage human use and activities

The Environmental Board in conjunction with partners organizes systematic training, advisement and assistance of the population to help them understand the key factors involved in preserving biodiversity. In doing so, it take into consideration the need to find new solutions for sustainable use of resources, including: implementation of new business models, promoting social enterprise and expansion of volunteer activity both in the framework of the of official protection procedure as well as through broader activities that preserve biodiversity.

b) Management policy or plan

A very important part of achieving the goals is the supplementation of the Sustainable Development Act with the concept of BPA. In 2014, the Environmental Board approved the West Estonian Archipelago BPA sustainable development programme for 2014-2020 and action plan for 2014-2020. The programme and action plan are the basis for implementing the BPA’s objectives.

c) Authority or mechanism to implement this policy or plan

The implementation of the BPA sustainable development programme is organized by the Environmental Board. Partners in implementation include the UNESCO Estonian National Committee, government departments, local governments in the BPA (associations of local

governments, civic groups and non-profits, including business advocacy organizations and LEADER activity groups, and representatives of higher education and vocational education institutions. To support implementation of the BPA programme and involve partners in administration, the Environmental Board may form working groups, committees and a research council.

d) Programmes for research, monitoring, education and training

To perform the strategic objectives set out in the BPA programme, the Environmental Board, in conjunction with partners and the BPA Council, plans concrete activities in the five-year action plans, which set out measurable target levels with regard to the solution for each objective addressed by the programme.

Monitoring of the state of the environmental takes place predominantly through the national environmental monitoring programme. In addition, parties such as state universities and working groups, Environmental Board and other government departments, private businesses, non-profits and foundations prepare and commission studies and inventories. Funding predominantly comes from various European Union programmes.

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

At the national level:

West Estonian Archipelago is the only biosphere reserve in Estonia.

At the regional level:

From the standpoint of the MAB programme, one of the most important cooperation partners is the EuroMAB regional network, which covers Europe and North America. In addition, Estonia engages in cooperation with NordMAB, which is a network of BPAs in the Nordics. The closest cooperation has taken place with Finland’s Archipelago Sea biosphere reserve. Cooperation also takes place with Latvia’s North Vidzeme Biosphere Reserve. In 2005-2007, there was close cooperation with several German biosphere reserves in Rügen and Schleswig-Holstein. More extensive contacts with other biosphere reserves has taken place at EuroMAB conferences.

Through twinning and/or transboundary biosphere reserves:

The BPA’s interest above all lies in participating in the networks of Baltic Sea states, marine areas and archipelago areas. No common projects have yet been conducted.

Within the World Network:

BPA represents Estonia at international biosphere area events, introduces its activities and participates in thematic and regional international networks of biosphere reserves. No common projects have yet been conducted.

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

No significant obstacles have yet emerged. There was a temporary hiatus in regard to implementing BPA objectives due to a change of the coordinating organization. In 2014, the BPA programme and action plan were adopted, which should make the work of the BPA much
more effective. Cooperative networks have been established and are constantly being developed. Sharing knowledge and experiences in how to achieve local economic development and growing well-being without posing a threat to protection of biological diversity in core and buffer zones is an extremely important question.

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:

BPA has become a pilot area for a sustainable economy and use of natural environment and natural resources;

Biodiversity has been preserved;

The BPA has preserved and showcased the islands’ cultural heritage;

BPA is a research, monitoring and training centre that supports a green economy;

Active cooperation in achieving the BPA’s objectives.

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: Environmental Board  
Street or P.O. Box: Narva mnt 7a  
City with postal code: Tallinn 15172  
Country: Republic of Estonia  
Telephone: +372 680 57438  
E-mail: info@keskkonnaamet.ee  
Web site: www.keskkonnaamet.ee

20.2. Administering entity of the core area(s):

Name: ____________________________________________________________
Street or P.O. Box: ________________________________________________
City with postal code: _____________________________________________
Country: ________________________________________________________
Telephone: ______________________________________________________
E-mail: __________________________________________________________
Web site: _________________________________________________________

20.3. Administering entity of the buffer zone(s):

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):

____________________________
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: Estonia
Name of BR: West Estonian Archipelago Biosphere Reserve
Year designated: 1990
Administrative authorities: (7.6) The Biosphere Reserve Centres under the Ministry of the Environment, specifically The Environmental Board.
Name Contact: (10.1)
Contact address: (Including phone number, postal and email addresses) (10.1)

Related links: The BPA does not have a separate website, but the Environmental Board website has information on the BPA. http://www.keskkonnaamet.ee/organistatsioon/unesco/.

Social networks: (6.5.4) None.

Description

General description:

Approximately 25 lines

West Estonian Archipelago Biosphere Reserve is situated in the eastern Baltic Sea and comprises the islands of Saaremaa, Hiiumaa, Vormsi and Muhu, as well as numerous islets and marine parts. Located in the transition zone between temperate needle-leaf to broad-leaf forests, terrestrial habitats contain pine forests, mixed spruce and deciduous forests, juniper and coastal meadows, swamps and peat bogs. The alvar forests (spruce, pine or birch forest on limestone plains with thin soils) are of particular interest. The West Estonian Archipelago is located in the southern part of the Boreal forest zone of the Northern hemisphere, where the south-taiga forest subzone changes into spruce hardwood subzone. Phytogeographically, Estonia belongs to the Euro-Siberian region of the Holarctic realm.

First and foremost the archipelago represents the ecosystems that have been formed on the coastal formations of different developmental phases of the Baltic Sea in the last ten thousand years. The distinctive features and diversity of nature in the West Estonian islands is mainly influenced by the geographical position, young age of the area, limerichness of soils and centuries of human activity.

Long coastal line where we can find both low and dune beaches, low bays with small islets and holms and thousands of years of land use has formed the structure of the islands’ forests, meadows, arable land and pastures, the result of which is a mosaic landscape and diverse nature of the islands. Terrestrial habitats contain pine forests, mixed spruce and deciduous woodlands, juniper and coastal meadows, swamps and peat bogs. The alvar forests (spruce, pine or birch forest on limestone plains with thin soils) are of particular interest. Parts of the area are designated as wetlands considered important according to Ramsar specifications.

Major ecosystem type: shallows of the Baltic sea, islets, lagoons, Grasslands (coastal, alvar, alluvial or marshy), woodlands and wooded meadows.
Major habitats & land cover types: Seashore halophilous meadow comprising species such as Eleocharitetum parvulae, Triglochi maritima, Bolboschoenus maritima etc.; alvars

UNESCO - Man and the Biosphere (MAB) Programme - Biosphere reserve periodic review – January 2013
characterized by Juniperus communis, Lonicera xylosteum, Rhamnus cathartica, Ribes alpinum etc.; boreonemoral forests with Pinus sylvestris, Betula pendula, Alnus glutinosa, Alnus incana, Picea abies; sparsely broadleaf forest and wooded meadow with Quercus robur, Tilia cordata, Ulmus glabra and Acer platanoides

**Bioclimatic zone:** Boreal

**Location** (latitude & longitude): Most central point: 58° 28' 12”, 22° 30' 00”

**Total Area** (ha): 1518 309,7

**Core area(s):** 36 056

**Buffer zone(s):** 461 860

**Transition area(s):** 1 020 504

**Different existing zonation:** The BPA’s zonation has remained the same. BPA zonation continues to be based on the protection regimes in the Estonian nature conservation system, where the core area is made up of strict nature reserves and special management zones and the buffer zones comprise limited management zones, special conservation areas and species protection sites. Transition areas include all other areas. The areas of the zones have changed, and this is treated in greater detail in Part I. Summary part i).

**Altitudinal range** (metres above sea level): 0 to +68

**Zonation map(s)** (refer to section 2.2.2): See zonation map in Annex 1.

**Main objectives of the biosphere reserve**

**Brief description**

The West Estonian Archipelago Biosphere Programme Area has five strategic objectives: BPA has developed into a pilot project for a sustainable economy and use of the natural environment and natural resources; biodiversity has been preserved, BPA has preserved and showcased the islands’ cultural heritage; BPA is a research, monitoring and training centre that supports a green economy; and active cooperation in achieving the objectives of the BPA.

**Research**

**Brief description**

The most important research in recent years includes marine habitat studies (including studies of processes in coastal waters, inventorying of natural assets in marine areas, mapping of habitats and developing monitoring methodology); in addition studies related to sustainable use of marine environment have been conducted (e.g. studies related to establishing a wind farm on Hiiumaa, and studies of fish life and algae). Land-based habitat studies have been conducted, encompassing different groups of species, species protection studies (European mink studies in Hiiumaa and seal studies are noteworthy) and hunting-related studies. Sociological surveys have also been conducted on Hiiumaa.

**Monitoring**

**Brief description**

Monitoring of the state of the environmental takes place predominantly through the national environmental monitoring programme. On the BPA, national monitoring takes place in the framework of eight programmes: living nature diversity and landscape monitoring, monitoring of inland bodies of water, groundwater monitoring, radiation monitoring, marine monitoring, meteorological monitoring, ambient air monitoring and integrated monitoring. A number of working groups set up at state universities have permanent observation areas in the BPA.
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<td>Firewood cutting                  Interdisciplinary studies</td>
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<td>Human migration                   Management issues X</td>
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<td>Hunting                           Mapping</td>
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<td>Indigenous people's issues        Planning and zoning measures</td>
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<td>Industry                          Policy issues</td>
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<td>Livelihood measures               Remote sensing</td>
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<td>Livestock and related impacts     Rural systems</td>
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<td>Micro-credits                     Transboundary issues/measures</td>
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<td>Mining                            Urban systems</td>
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<td>Natural hazards</td>
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<td>Non-timber forest products</td>
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<td>Social/Socio-economic aspects</td>
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<td>Tourism</td>
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Annex II to the Biosphere Reserve Periodic Review, January 2013
Promotion and Communication Materials
for the biosphere reserve

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.

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Name and Address: Lia Rosenberg
Kõrgessaare mnt 18, 92412 Kärdla Estonia

Signature : Date : 30.09.2015
(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
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AGREEMENT GRANTING NON-EXCLUSIVE RIGHTS

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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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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 Coordinating 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.