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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

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**Report on the survey on climate change
and protected areas**

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1. INTRODUCTION

In the past decades the effects of Climate Change on biodiversity has been increasingly recognised by the Bern Convention. During this period, several recommendations¹ to Contracting Parties have been endorsed by the Standing Committee to the Bern Convention. Thousands of highly relevant scientific papers and many books have been published. Several of them cover the whole European territory (i.e. climatic atlases such as for birds and butterflies), thus this information is very informative for all European countries, including those outside the European Union. Based on this existing and constantly improving knowledge, many international and national guidelines have been prepared by various governmental and non-governmental institutions.

A special issue is the role of protected areas in adapting biodiversity to Climate Change. In the European context, the most relevant and up-to-date guidance to policy makers and site managers is given in the 2013 “Guidelines on Climate Change and Natura 2000”². Although these guidelines are primarily dedicated to European Union’s Natura 2000 network of protected areas, all principles are also applicable to the Emerald Network of sites in the non-EU countries .

Yet, it has been observed that Climate Change adaptation/mitigation measures linked to the management of protected areas have been implemented at different scales with various success in different Contracting Parties to the Bern Convention³. The aim of this study was to reveal and take stock of particular needs of Contracting Parties for tackling Climate Change in the context of the management of protected areas, particularly Emerald Network sites. Based on the responses received from the Contracting Parties, the Bern Convention Secretariat will assess the needs of Contracting Parties and identify appropriate responses which will provide orientations on how to help countries integrate Climate Change in protected areas management frameworks in a more systematic way.

2. DATA COLLECTION

A questionnaire was developed (Appendix I) to collect information from Contracting Parties to the Bern Convention. It contained 14 questions arranged under three key themes that were following each after other in logical order:

1. Self-assessment of progress in the implementation of CC adaptation / mitigation measures linked with protected areas in a particular country.
2. Specific account of problems and obstacles faced during the implementation of Climate Change adaptation/mitigation measures.
3. Ideas and suggestions on how the Bern Convention Secretariat could assist Contracting Parties to improve the implementation of Climate Change adaptation/mitigation measures.

Responses to the questions of the first theme were based on point-scoring but to facilitate answers to questions of the 2nd and 3rd themes, possible answers were provided. Yet in each case Contracting Parties could also add their free open-ended comments where appropriate, or in the case of the 2nd and 3rd themes, a category “other” could be selected with a specification what was meant under this category. For the 2nd and 3rd themes, also more than one answer could be selected for one question.

This questionnaire did not cover issues related to the constitution of Natura 2000 or Emerald Network, where the elements of mitigation and adaptation to Climate Change are embedded in the methodology of setting-up these networks, namely addressing site size and connectivity between sites (even across country borders) which is discussed in the Bio-geographical evaluation seminars or bi-lateral meetings on network sufficiency for both EU and non-EU countries. But it was assumed that more sites, or adjustments to site

¹ <https://www.coe.int/en/web/bern-convention/recommendations-on-climate-change>

² <http://ec.europa.eu/environment/nature/climatechange/pdf/Guidance%20document.pdf>

³ An analysis of the implementation of recommendations made by the group of experts on biodiversity and climate change (2006-2011) <https://rm.coe.int/1680746249>

boundaries (both under the Natura 2000 or the Emerald networks) in future will be necessary to face Climate Change challenges.

The questionnaire was addressed to Focal Points to the Bern Convention of all its 51 Contracting Parties. By 25 October, 14 responses have been received. Low response rate, particularly in the group of European Union countries (5 responses received), can be explained by a very busy agenda in terms of reporting requirements such as Art. 17 of the Habitats Directive, the Key Concepts Document under the Birds Directive, and others. Responses were received from following countries: Armenia, Andorra, Czech Republic, Finland, Georgia, Island, Lichtenstein, Montenegro, Netherlands, Poland, Serbia, Slovakia, Switzerland, and Ukraine.

3. RESULTS AND DISCUSSION

Results are arranged according to the three key themes in three chapters. EU and non-EU countries are analysed often separately, provided that they have started to build the networks (i.e. Natura 2000 and Emerald) in different time periods. In the evaluation of the responses the main efforts were put on analysing standard answers to reveal general regularities, but open-ended questions and comments were studied as well and reflected in this study where appropriate.

a. Self-assessment of progress

The questions focussed on four main aspects in adaptation of the national networks of protected areas to climate change. First, there should be sufficient awareness about climate change and acceptance that it is unavoidable. Second, each protected area needs to have clear conservation objectives where projected climate change effects are taken into account. Third, these conservation objectives need to be addressed by adequate conservation measures. Fourth, in order to periodically review and adapt management methods, conservation objectives and measures must be monitored. Countries were asked to evaluate the above issues by scoring from 0 to 5 and in Figure 1 we examine the responses by country and by 2 main country groups: EU and non-EU Contracting Parties.

Regarding the awareness, the scores were quite high, and no country reported lower scores than category '3' which could possibly be interpreted as "acceptable" (Figure 1). However, when it came to more practical questions, in general, scores tended to be significantly lower. Whilst there were no significant difference between EU and non-EU countries about awareness of climate change, then with every next question the difference increased and it was already remarkable regarding implementation of conservation measures and monitoring the outcome. Yet it needs to be taken into account that this is a self-evaluation and that the sample size is small to do objective comparisons.

Countries were also asked to provide an indicative coverage of sites (in %) of PA network which have operative management plans in place that are systematically reviewed based on monitoring data (question I-1_E, Appendix I). Although the required standard of reponse was set to "percentage of the network", the responses were very varied: from "no response" to area under management, range between percentages, and actual percentage, as expected. At least some indicative value have been provided by 12 countries (Figure 2). The outcome ranged from no management plans (Andorra) to 85% of the network covered (the Netherlands), an average being 43.9% of the network. Yet, it is not always clear if these figures reflect the presence of management plans as such, or effectively adaptive management plans which are regularly reviewed according to monitoring information.

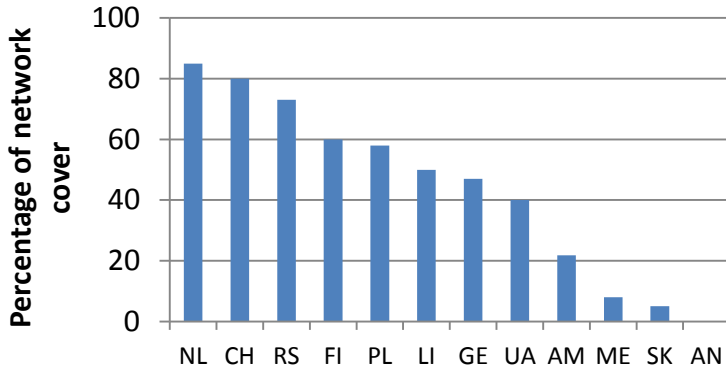
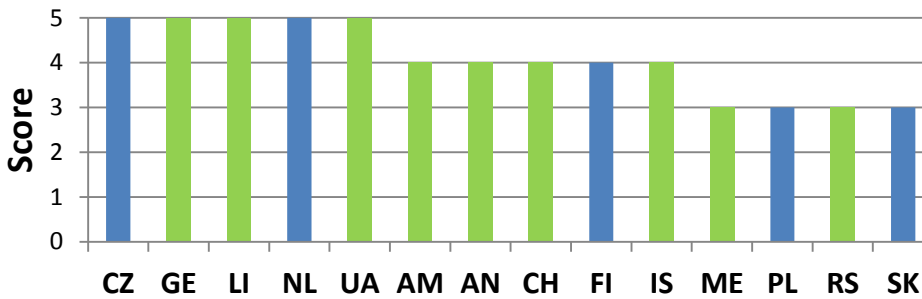


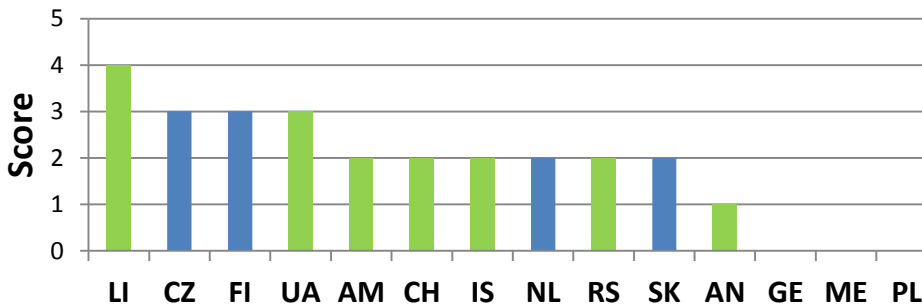
Figure 2. Percentage of PA network covered by adaptive management plans.

The questionnaire also asked if there are species and/or habitats or particular protected areas for which CC effects have been already documented. Five Contracting Parties replied that no particular examples can be derived from their countries yet (but that studies are ongoing), four other did not provide definite answer. The remaining countries provided certain examples, together with web-links to publications (Appendix II). We are grateful to countries for sharing this valuable information with us.



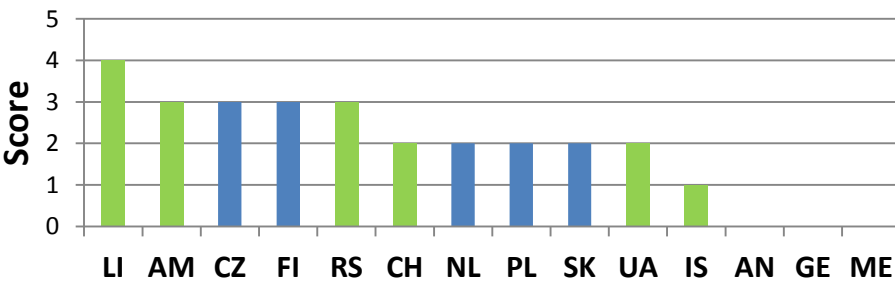
I-1_A Awareness

EU: 4.0
Non-EU: 4.1



I-1_B Conservation objectives

EU: 2.0
Non EU: 1.8



I-1_C Conservation measures

EU: 2.4
Non-EU: 1.7

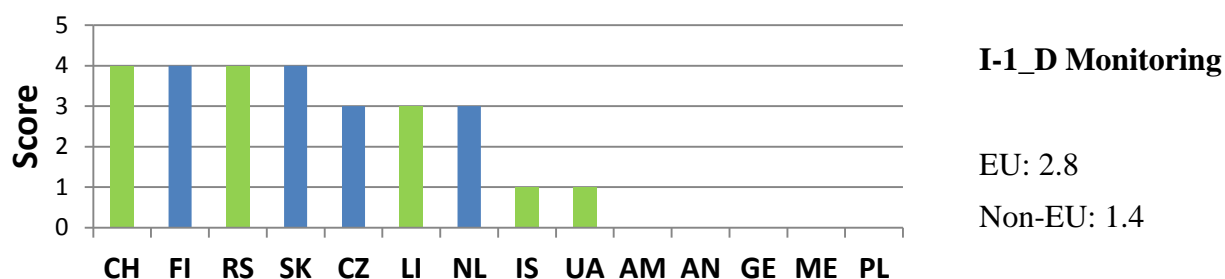


Figure 1. Results of self-assessment of progress in the implementation of CC adaptation measures in protected areas (Questions part I, see Appendix I). Blue bars indicate EU countries (Natura 2000 network), green bars non-EU countries (Emerald Network). Numbers to the right show the average of scores reported by countries of each group.

b. Problems and obstacles faced

The second part of the questionnaire covered the problems and obstacles reported by the Contracting Parties (Table 1). In this case countries were offered possible answers, but they could also choose ‘other’ and report any problems which were not foreseen in the questionnaire.

Table 1. Specific account of problems and obstacles encountered in the implementation of Climate Change adaptation/mitigation measures linked with the management of protected areas.

Number	Possible answer	Number of positive answers
1. Please indicate the problems /obstacles in reaching sufficient awareness of CC in your institution		
II-1_A	None	2
II-1_B	Lack of information supporting the importance of CC for your country, or lack of knowledge where such information can be found?	7
II-1_C	Information exists but there are difficulties in interpreting the evidence in a meaningful way for your country?	7
II-1_D	There are no documented observations of negative trends of wild species and habitats in your country which can be attributed to CC?	7
II-1_E	Other, please specify:	4
2. Please indicate any obstacles in setting appropriate conservation objectives for protected areas taking into account CC		
II-2_A	None	1
II-2_B	Lack of analytical skills and experience in searching for relevant information and data interpretation?	5
II-2_C	Poor information on presence of species and habitats in protected areas? Lack of up-to-date data?	4
II-2_D	The procedure for setting conservation objectives for individual species and habitats for each protected area is not established?	6
II-2_E	Other, please specify:	5
3. Please indicate why appropriate conservation measures for CC adaptation/mitigation are not either fully or partly implemented.		
II-3_A	None	0
II-3_B	Lack of knowledge/experience about appropriate management techniques	10
II-3_C	Difficulties to act in private land, and to involve landowners	8
II-3_D	Lack of cross-sectoral cooperation	11

II-3_E	Lack of funding	11
II-3_F	Other, please specify:	3
4. Please indicate the obstacles/problems in monitoring management results and sharing such information at national and/or international level		
II-4_A	None	0
II-4_B	Lack of general monitoring scheme for PAs	8
II-4_C	Lack of sufficiently qualified staff	8
II-4_D	Information exists but the importance of sharing it is not recognised	6
II-4_E	Other, please specify:	4

Only two countries reported no problems with awareness level on Climate Change (Table 1). Please note that this question was asked about the institution of the respondent, and not about the general situation in the country. About half of the countries indicated lack of information/studies or lack of knowledge where necessary information can be found and difficulties in interpreting the evidence in a meaningful way. “Other” problems also revealed some potentially interesting observations. According to certain countries it is too early to judge the CC effects, there is a lack of horizontal or summary evidence and there is a lack of (examples?) of specific CC countermeasures for species and habitat types.

Only one country had no problems with setting conservation objectives for protected areas (Table 1). Most frequently reported reasons (suggested by almost half of the countries) were the fact that no specific procedure for setting conservation objectives is in place, there is lack of analytical skills or experience in setting objectives, or there is a lack of most up-to-date information about distribution and abundance of species and habitats. There was also an opinion that other pressures to biodiversity are more important than Climate Change.

All countries had at least some problems with the implementation of adequate conservation measures and monitoring of management results. Lack of funding, lack of cross-sectoral cooperation, lack of knowledge/experience about appropriate management techniques were mentioned nearly from all countries. Problems with land ownership were also mentioned in more than half of the countries. In 8 countries (!) there was no general monitoring scheme established for PAs and a lack of sufficiently qualified staff for undertaking monitoring activities.

To conclude, the problems described are of very different nature. Some of them seem to be very fundamental and common in most countries, i.e. lack of funding and adequate human resources, but others can be dealt with easier, i.e. improve the information flow and the communication, and establish key elements of adaptive planning: objectives-measures-monitoring-review⁴. In many countries the stage of setting objectives is often overlooked and managers tend to address certain pressures with measures without setting quantitative objectives. But in such case it is difficult to measure management success and thus review the activities in an adaptative perspective.

c. Ideas and suggestions

In the third part of the questionnaire countries were asked to share any ideas and suggestions on how to improve the situation with adaptive PA management (Table 2). The first question was about possible ways to improve awareness. Convincingly most supported solution was to provide positive examples to show that many adaptation/mitigation measures “work in real life” (13 countries!). Seminars and study visits, as well as sharing examples of working organisational structures at national level were also supported by nearly half of the countries. Different training activities were considered useful also to improve setting of conservation objectives, conservation measures and introducing monitoring schemes.

⁴ Please see also document “Towards management of Emerald sites: a guidance document” (2014). URL: https://pjp-eu.coe.int/documents/1461016/4159207/pa08e_2014_Management_Emerald_Sites_final.pdf/1447ba1d-3e47-4336-a427-cc88639aa5a7

Table 2. Ideas and suggestions on how the Bern Convention Secretariat could assist Contracting Parties to improve the implementation of climate change adaptation/mitigation measures associated with management of protected areas.

Number	Possible answer	Number of positive answers
1. Please indicate possible suggestions for improving awareness of CC in your institution		
III-1_A	Demonstrate (through seminars and study visits) how the experience from Natura 2000 can be transferred to the Emerald Network?	5
III-1_B	Provide positive examples to show that many adaptation/mitigation measures “work in real life” and in some cases do not even require a lot of resources?	13
III-1_C	Showcase examples of working organisational structures at national level and strategic policy documents supporting the awareness of CC at institutional level	7
III-1_D	Other, please specify:	0
2. Please indicate suggestions which could support the setting up of conservation objectives for protected areas taking into account CC.		
III-2_A	Training seminars on practical setting of conservation objectives at site level	11
III-2_B	Training on how to find, use and interpret data on the vulnerability of ecosystems / species / habitats to CC and how they relate to site- and country-specific contexts?	10
III-2_C	Other, please specify:	2
3. Please indicate suggestions which could support the implementation of conservation measures for CC adaptation/mitigation..		
III-3_A	Study tours to sites which already implement conservation measures for CC adaptation/mitigation	11
III-3_B	Launch of an international knowledge exchange on site management similar to the “new bio-geographical process” in the EU ⁵ [This also relates to all other points in this section]	11
III-3_C	Provide guidance on where to find published materials on adequate management techniques?	9
III-3_D	Other, please specify:	0
4. Please indicate suggestions which could support the monitoring of management results and the sharing of this information at national and/or international level.		
III-4_A	Seminars aimed to foster the development of monitoring systems of species and habitats	7
III-4_B	Training on adaptive management planning: how to use monitoring results to review conservation objectives?	10
III-4_C	Other, please specify:	2

Greatly supported was the suggestion to initiate an international knowledge exchange on site management similar to the “new bio-geographical process” in the EU. Several non-EU countries expressed an interest to learn more about the management of Natura 2000 areas. EU countries seemed to be more keen to learn about relating monitoring results to conservation measures. Related to conservation measures, a suggestion to provide guidance on where to find published materials on adequate management techniques was also supported by more than half of the countries.

To summarise, various educational activities were highly supported, either in form of seminars, study tours, or as information exchange platform. It seems that all topics related to adaptive PA management

⁵ http://ec.europa.eu/environment/nature/natura2000/seminars_en.htm

(conservation objectives, conservation measures, monitoring) are subjects of interest. In order to reveal possible differences in preferences by EU and non-EU countries, Figure 3 below shows a comparison between these country groups for each question of the Parts II and III of the questionnaire. In many aspects countries of these 2 groups responded similarly. Although the small sample-size did not enable to do statistically meaningful comparisons, yet following most pronounced differences between EU and non-EU countries were identified (parts A and B of Figure 3 combined):

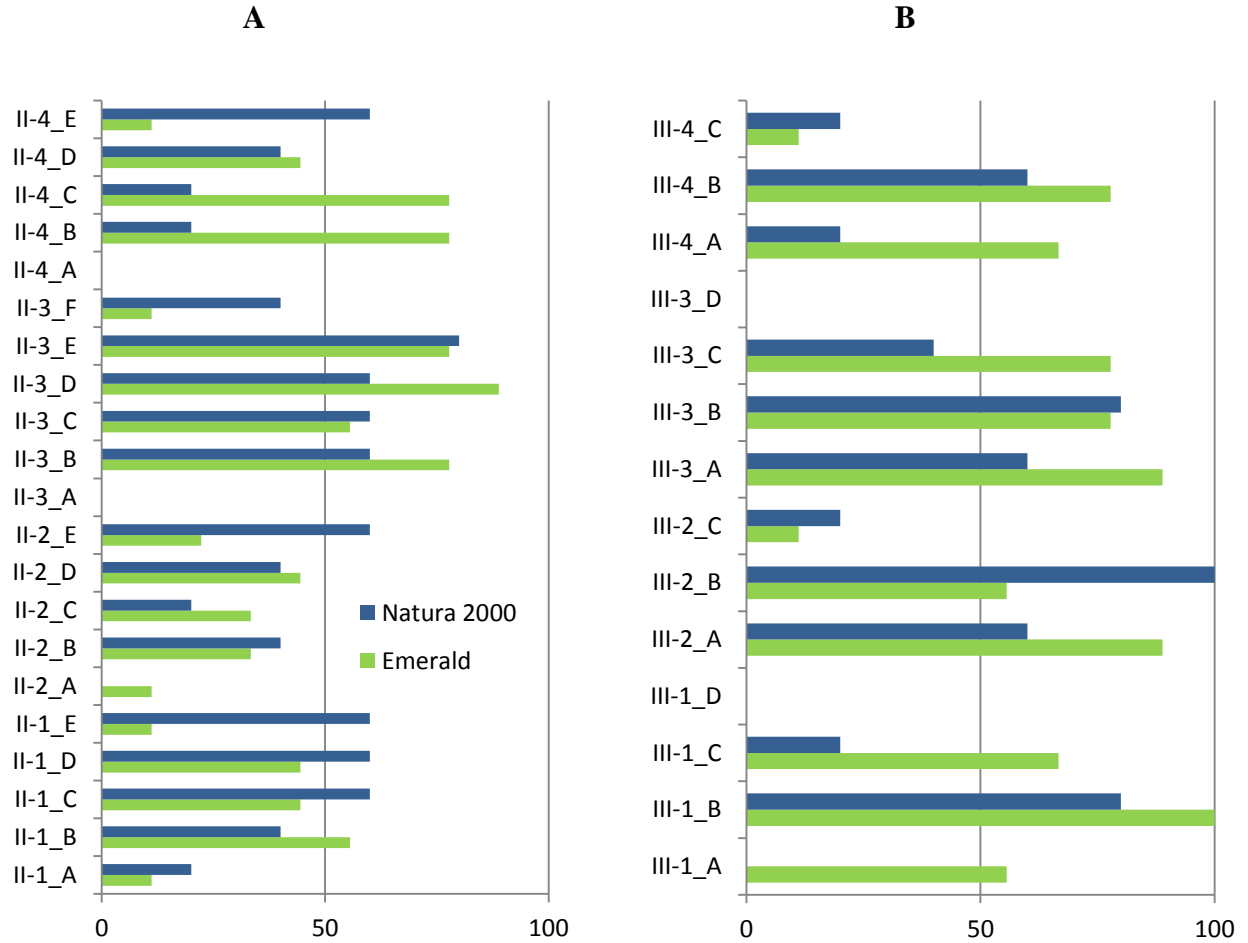


Figure 3. Proportions of country responses on questions by EU (blue) and non-EU (green) country groups.

- EU countries had more specific problems falling under category “other” than non-EU countries regarding Part II. For example, following issues were mentioned as problems: lack of scientific knowledge of Climate Change impacts on most of the species and habitats (“too early to judge”) and that other factors than Climate Change (e.g. forestry, agriculture, peat industry) have been by far more important reasons for the decline in biodiversity. In Part III, EU countries would more welcome training on how to find, use and interpret data on the vulnerability of ecosystems/species/habitats to Climate Change and how they relate to site- and country-specific contexts (III-2_B).
- Non-EU countries mentioned more the lack of monitoring schemes and lack of qualified staff as problems. Regarding Part III questions, Emerald countries were very interested in seminars and study visits to transfer the experience from Natura 2000 to the Emerald Network (III-1_A) and to see examples of working organisational structures at national level (III-1_C). Non-EU countries need more guidance on where to find published materials on adequate management techniques (III-3_C) and seminars aimed to foster the development of monitoring systems of species and habitats (III-4_A)

To conclude, some differences in priorities between EU and non-EU countries exist, although they are not very substantial. It is also obvious that EU countries have longer experience with concerted international nature conservation programmes (i.e. building Natura 2000 network and Natura 2000 management; and Climate Change adaptation/mitigation requires such international efforts as well) thus EU's experience can be valuable for non-EU countries.

4. CONCLUSIONS AND RECOMMENDATIONS

The aim of this survey was to reveal particular needs of Contracting Parties for tackling Climate Change in the context of the management of protected areas, particularly Emerald Network sites and to develop recommendations for appropriate responses which will provide orientations on how to help countries integrate Climate Change in protected areas management frameworks in a more systematic way. Part I of the enquiry included self assessment by the Contracting Parties, Part II suggested problems which countries face in implementing Climate Change adaptation aspects and Part III tried to suggest actions to improve the situation.

Although the sample size was quite small (only 14 questionnaires were returned from 51 countries; thus we don't know with what degree of confidence we can extrapolate findings to other countries), we still tried to draw conclusions which would be useful for planning future activities. Particularly this is much needed for the Emerald Network, where the first round of bio-geographical seminars about sufficiency of the network has been carried out for many countries. As for many species and habitats the network is considered as sufficient, thus ensuring the adequate and adaptive conservation measures would be the next logical step.

Removing various pressures on species and habitats which are most at risk as a result of Climate Change helps to increase their adaptive capacity to changes and raise their chances of survival. In this context protected areas and their networks play a key role in fulfilling this task and here the adaptive management approach, able to react on most recent scientific data, is very important. Unfortunately, in the previous enquiry report⁶ it was observed that "this very important action was one of those for which evidence was most difficult to find; i.e. only in one country (out of 20) there was evidence identified that adaptive management practices were being implemented, i.e. that management would be informed by appropriate monitoring and the practices employed being modified if necessary... what is surprising, however, is the lack of evidence of the recognition of the desirability of the [adaptive management] approach, and hence of commitments to adopting the approach".

After 6 years, in this study, quite many countries reported that such management plans are covering substantial parts of their protected area network (see question I-1_E and Figure 2). Still, in the next part of the questionnaire some countries also reported on the lack of monitoring schemes (II-4_B). The problem is that, when referring to "adaptive management", we are talking about structured, iterative process of optimal management decision-making in the face of uncertainty, based on system monitoring⁷. Thus in the absence of monitoring, there can be doubts whether site management plans, even if they exist, can be considered as "adaptive".

The responses also suggested that in general there is sufficient awareness about Climate Change, but when it came to more specific issues, such as protected species and habitats, protected areas and their management, evidence of missing information was identified, i.e. how Climate Change affects certain species and habitats, and how to assess potential problems in context of certain protected area.

⁶ An analysis of the implementation of recommendations made by the group of experts on biodiversity and climate change (2006-2011) <https://rm.coe.int/1680746249>

⁷ <http://ec.europa.eu/environment/nature/climatechange/pdf/Guidance%20document.pdf>

After consideration and analysis of all submissions, following directions can be recommended to the Bern Convention Secretariat. This is based on the top-6 most supported topics by the countries which should be addressed in the future work:

1. Showcase real successful Climate Change adaptation/mitigation measures.
2. Training on setting of conservation objectives at the site level.
3. Exchange of international knowledge and experience on site management in non-EU Contracting Parties similar to the “new bio-geographical process” in the EU¹.
4. Training on how to find, use and interpret data on vulnerability of ecosystems / species / habitats to Climate Change and how they relate to site- and country-specific contexts?
5. Training in / assistance for adaptive management planning and the use of monitoring results to review conservation objectives.
6. Provide guidance on where to find published materials on adequate conservation measures for different species and habitats?

The above topics could be addressed in different ways such as:

- Guidance where to find already existing information: guidelines, scientific evidence etc.
- Development of new additional guidance documents.
- Web-based communication platform for information accumulation and experience exchange.
- In-door seminars organised (either country-specific, regional or international).
- Study tours, i.e. visits to specific sites to demonstrate some valuable experience.

Ideally elements of all above ways of communication could be employed (as it is in the “new bio-geographical process“ in the EU, in combination with LIFE programme) but for non-EU countries the choice will probably depend on the available budget, size of the events and the number of countries involved.

Priority for action for the Bern Convention Secretariat should clearly be given to non-EU countries which have received much less support and international involvement for developing their networks of protected areas than EU countries (i.e. guidelines, communication platform etc.). It could also be recommended that the Bern Convention Secretariat contacts the European Commission and checks if representatives of non-EU countries could participate in upcoming “new“ bio-geographical seminars as observers.

Very detailed and up-to-date guidance to policy makers and site managers about Climate Change and protected areas is already available in “Guidelines on Climate Change and Natura 2000”⁸ prepared by the European Commission in 2013. This is highly relevant also to non-EU countries. Thus the recommendation would be to address the first point of “channeling“ already existing materials to specific target audiences rather than developing new ones.

Some of topics, for example, demonstration of successful habitat management, can be difficult to handle indoors. It is always good to have a balance between theory and on-ground evidence. In the case of wildlife management, it is always better to see demonstration on ground. It is also important to link people with similar responsibilities in seminars or study tours: i.e. site manager with site manager, biologist with biologist, national administration representative with similar etc. For study tours, it is highly recommended to twin similar sites with similar problems, so that experience can be replicated.

⁸ <http://ec.europa.eu/environment/nature/climatechange/pdf/Guidance%20document.pdf>

It can be also recommended that training on adaptive site management can be organised in the context of other already ongoing activities. For example, Standard Data Forms of Emerald Network and Natura 2000 databases contain valuable information which directly leads to setting site-level conservation objectives (Point 2 above). Also, information which will result from the reporting processes on the conservation status of species and habitats could help assess most vulnerable species and habitats which may need special care also from the Climate Change perspective (Point 5 above).

Eventually, there is one suggestion which is not directly linked to the questionnaire. In the past decades countries have put significant efforts in creating Natura 2000 and Emerald Network databases. These databases, among other topics, provide detailed information about occurrence and abundance of each protected species and habitats (Annex I of the EU Birds Directive; Annexes I and II of the EU Habitats Directive, Resolutions No. 4 (1996) and No. 6 (1998) of the Bern Convention) in each site designated under Natura 2000 or the Emerald Network. It could be of interest to link this impressive dataset with information from published climatic atlases (such as birds and butterflies) in order to evaluate how site conservation objectives could change (as an effect of species and habitat disappearance and appearance in SDFs of different sites) with the predicted Climate Change process. As a result of such study, it should be possible to identify possible “hotspots“ of needed protected area management action at the level of the whole European continent.

**APPENDIX I
CLIMATE CHANGE AND PROTECTED AREAS: QUESTIONNAIRE**

Abbreviations: CC=Climate Change, PA=Protected Areas (i.e. Natura 2000 and Emerald Network)

GENERAL INFORMATION			
Country		Compiler	
Date of submission		E-mail	
		Telephone	
		Institution	

Part I. General indicative self-assessment of progress in the implementation of CC adaptation / mitigation measures linked with protected areas		
Please provide score from 0 (no CC related issues were addressed) to 5 (ideal situation both in quantity and quality) in the grey area corresponding to each question.		
I-1_A	Is the awareness about CC and acceptance that it is unavoidable sufficient/appropriate in your institution?	
I-1_B	Are conservation objectives for protected areas developed so as to take into account the species, habitat types and ecosystems which are most likely to be affected by CC?	
I-1_C	Are there adequate pro-active conservation measures in place for PAs which take into account CC aspects?	
I-1_D	Is the success of conservation measures monitored, and are monitoring results publicly available and taken into account in reviewing conservation objectives and management techniques?	
Additional comments if appropriate:		

Additional questions		
I-1_E	Please provide an indicative coverage of sites (in %) of PA network in your country which have operative management plans in place that are systematically reviewed based on monitoring data:	
I-1_F	Are there species and/or habitats or protected areas for which CC effects have been already documented in your country? Please provide a list with comments as appropriate. This is a free text. Where appropriate, please add also links to any relevant publication or web-resource (preferably in English):	
Additional comments if appropriate:		

Part II. Specific account of problems and obstacles encountered in the implementation of Climate Change adaptation/mitigation measures linked with the management of protected areas

1. Please indicate (by ticking X in the corresponding box) the problems/obstacles in reaching sufficient awareness of CC in your institution. Select one or more of offered options, or describe in your own words:

II-1_A	None	<input type="checkbox"/>
II-1_B	Lack of information supporting the importance of CC for your country, or lack of knowledge where such information can be found	<input type="checkbox"/>
II-1_C	Information exists but there are difficulties in interpreting the evidence in a meaningful way for your country	<input type="checkbox"/>
II-1_D	There are no documented observations of negative trends of wild species and habitats in your country which can be attributed to CC	<input type="checkbox"/>
II-1_E	Other, please specify:	<input type="checkbox"/>

Additional comments if appropriate:

2. Please indicate (by ticking X in the corresponding box) any obstacles in setting appropriate conservation objectives for protected areas taking into account CC. Select one or more of offered options, or describe in your own words:

II-2_A	None	<input type="checkbox"/>
II-2_B	Lack of analytical skills and experience in searching for relevant information and data interpretation	<input type="checkbox"/>
II-2_C	Poor information on presence of species and habitats in protected areas Lack of up-to-date data	<input type="checkbox"/>
II-2_D	The procedure for setting conservation objectives for individual species and habitats for each protected area is not established	<input type="checkbox"/>
II-2_E	Other, please specify:	<input type="checkbox"/>

Additional comments if appropriate:

3. Please indicate (by ticking X in the corresponding box) why appropriate conservation measures for CC adaptation/mitigation are not either fully or partly implemented. Select one or more of offered options, or describe in your own words:

II-3_A	None	<input type="checkbox"/>
II-3_B	Lack of knowledge/experience about appropriate management techniques	<input type="checkbox"/>
II-3_C	Difficulties to act in private land and to involve landowners	<input type="checkbox"/>
II-3_D	Lack of cross-sectoral cooperation	<input type="checkbox"/>
II-3_E	Lack of funding	<input type="checkbox"/>
II-3_F	Other, please specify:	<input type="checkbox"/>

Additional comments if appropriate:

4. Please indicate (by ticking X in the corresponding box) the obstacles/problems in monitoring management results and sharing such information at national and/or international level. Select one or more of offered options, or describe in your own words:

II-4_A	None	<input type="checkbox"/>
II-4_B	Lack of general monitoring scheme for PAs	<input type="checkbox"/>
II-4_C	Lack of sufficiently qualified staff	<input type="checkbox"/>
II-4_D	Information exists but the importance of sharing it is not recognised	<input type="checkbox"/>
II-4_E	Other, please specify:	<input type="checkbox"/>

Additional comments if appropriate:

Part III. Ideas and suggestions on how the Bern Convention Secretariat could assist Contracting Parties to improve the implementation of Climate Change adaptation/mitigation measures associated with management of protected areas

1. Please indicate (by ticking X in the corresponding box) possible suggestions for improving awareness of CC in your institution. Select one or more of offered options, or describe in your own words:

III-1_A	Demonstrate (through seminars and study visits) how the experience from Natura 2000 can be transferred to the Emerald Network	<input type="checkbox"/>
III-1_B	Provide positive examples to show that many adaptation/mitigation measures “work in real life” and in some cases do not even require a lot of resources	<input type="checkbox"/>
III-1_C	Showcase examples of working organisational structures at national level and strategic policy documents supporting the awareness of CC at institutional level	<input type="checkbox"/>
III-1_D	Other, please specify:	<input type="checkbox"/>

Additional comments if appropriate:

2. Please indicate (by ticking X in the corresponding box) suggestions which could support the setting up of conservation objectives for protected areas taking into account CC. Select one or more of offered options, or describe in your own words:

III-2_A	Training seminars on practical setting of conservation objectives at site level	<input type="checkbox"/>
III-2_B	Training on how to find, use and interpret data on the vulnerability of ecosystems / species / habitats to CC and how they relate to site- and country-specific contexts	<input type="checkbox"/>
III-2_C	Other, please specify:	<input type="checkbox"/>

Additional comments if appropriate:

3. Please indicate (by ticking X in the corresponding box) suggestions which could support the implementation of conservation measures for CC adaptation/mitigation. Select one or more of offered options, or describe in your own words:

III-3_A	Study tours to sites which already implement conservation measures for CC adaptation/mitigation	<input type="checkbox"/>
III-3_B	Launch of an international knowledge exchange on site management similar to the “new bio-geographical process” in the EU ⁹ [This also relates to all other points in this section]	<input type="checkbox"/>
III-3_C	Provide guidance on where to find published materials on adequate management techniques	<input type="checkbox"/>
III-3_D	Other, please specify:	<input type="checkbox"/>

⁹ http://ec.europa.eu/environment/nature/natura2000/seminars_en.htm

Additional comments if appropriate:

4. Please indicate (by ticking X in the corresponding box) suggestions which could support the monitoring of management results and the sharing of this information at national and/or international level. Select one or more of offered options, or describe in your own words:

III-4_A	Seminars aimed to foster the development of monitoring systems of species and habitats	<input type="checkbox"/>
III-4_B	Training on adaptive management planning: how to use monitoring results to review conservation objectives	<input type="checkbox"/>
III-4_C	Other, please specify:	<input type="checkbox"/>

Additional comments if appropriate:

APPENDIX II

CLIMATE CHANGE AND PROTECTED AREAS: WEB LINKS TO LITERATURE

ARMENIA

Vulnerability of protected areas

<http://nature-ic.am/en/publication/THIRD-NATIONAL-COMMUNICATION/7367>

The impact on invertebrate species

<http://nature-ic.am/Content/announcements/7326/Must%20be%20conserved.pdf>

ANDORRA

Current and Future Habitat Suitability of Rhododendron ferrugineum

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0147324>

Monitoring of butterflies

<https://www.iea.ad/presentacio-bmsand>

Pyrenees Climate Change Observatory

<https://www.opcc-ctp.org/en/florapyr>

<https://www.opcc-ctp.org/en/replim>

FINLAND

Birds

<https://doi.org/10.1016/j.biocon.2018.08.015>

<https://onlinelibrary.wiley.com/doi/full/10.1002/ece3.3328>

https://link.springer.com/chapter/10.1007/978-3-319-98681-4_23

<https://link.springer.com/article/10.1007/s10531-012-0423-y>

<https://link.springer.com/article/10.1007/s10531-015-1043-0>

<https://onlinelibrary.wiley.com/doi/10.1111/gcb.13150>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0063376>

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ece3.1162>

<https://www.sciencedirect.com/science/article/pii/S0006320714000871>

<https://onlinelibrary.wiley.com/doi/10.1111/gcb.12573>

<http://hdl.handle.net/10138/232780>

<https://natureconservation.pensoft.net/article/1337/>

<http://rsbl.royalsocietypublishing.org/content/7/3/395>

<https://www.sciencedirect.com/science/article/pii/S1146609X1000010X>

<https://www.sciencedirect.com/science/article/pii/S0006320708000992>

Butterflies

<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2486.2008.01789.x>

<https://link.springer.com/article/10.1023%2FA%3A1024189828387>

ICELAND

Impact on Iceland

<https://www.vedur.is/media/loftslag/Skyrsla-loftslagsbreytingar-2018-Vefur-NY.pdf>

NETHERLANDS

Changes in plant species

<https://www.naturetoday.com/intl/nl/nature-reports/message/?msg=24544>

<https://www.clo.nl/indicatoren/nl1429-klimaat-en-warmte--en-koudeminnende-soorten>

Lichens

https://www.blwg.nl/mossen/korstmossen/korstmossen_en_klimaat.aspx

Songbirds

<https://nioo.knaw.nl/en/press/ecology-buys-time-evolution>