WREN Meeting – FINAL Minutes
October 21 - 22, 2015
Swiss Federal Office of Energy
Bern, Switzerland

Overview
The WREN (IEA Wind Task 34) meeting was held October 21 – 22, 2015, in Bern, Switzerland. The purpose of this meeting was to discuss the status of key WREN activities and determine the next step for the many in-progress projects. Extension of the task was also discussed. This in-person meeting included representatives from seven of the ten member countries. Germany is temporarily not engaged in WREN as funding is not currently available to work on this task. France and Spain are new task members and have not yet attended an in-person meeting. A participant list can be found in Table 1. The meeting agenda is found in Attachment 1.

Table 1. Meeting attendees

<table>
<thead>
<tr>
<th>Country</th>
<th>Representative(s)</th>
<th>Affiliation</th>
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<tbody>
<tr>
<td>Ireland</td>
<td>Sinéad Cummins*</td>
<td>BirdWatch Ireland</td>
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<tr>
<td>Netherlands</td>
<td>Marijke Warnas</td>
<td>Rijkswaterstaat – Branch Water, Traffic and Environment (WVL), Department of Water Quality and Nature Management (VWKN)</td>
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<tr>
<td>Norway</td>
<td>Roel May</td>
<td>Norwegian Institute for Nature Research – NINA</td>
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<tr>
<td>Sweden</td>
<td>Asa Elmqvist</td>
<td>Vindval</td>
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<td></td>
<td>Annika Nilsson</td>
<td>Swedish Energy Agency</td>
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<tr>
<td>Switzerland</td>
<td>Hans Buser</td>
<td>nateco AG</td>
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<td></td>
<td>Muriel Perron</td>
<td>nateco AG</td>
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<td></td>
<td>Markus Geissmann</td>
<td>Swiss Federal Office of Energy</td>
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<td>Katja Maus</td>
<td>Swiss Federal Office of Energy</td>
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<td>Regula Peterson</td>
<td>Swiss Federal Office of Energy</td>
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<tr>
<td>United Kingdom</td>
<td>Finlay Bennet</td>
<td>Marine Scotland Science</td>
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<td>Elizabeth Masden*</td>
<td>University of the Highlands and Islands</td>
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<td>United States</td>
<td>Karin Sinclair</td>
<td>National Renewable Energy Laboratory</td>
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<td></td>
<td>Jocelyn Brown-Saracino</td>
<td>U.S. Department of Energy</td>
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<td></td>
<td>Andrea Copping</td>
<td>Pacific Northwest National Laboratory</td>
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<td></td>
<td>Lucas Feinberg*</td>
<td>U.S. Department of Energy</td>
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*Participated via phone

The key objectives of the meeting were to:

1. Share WREN Hub progress and determine next steps
2. Decide on next steps of stakeholder survey
3. Determine if additional white papers should be started
4. Identify additional themes/presenters for webinar series
5. Determine next steps to complete Adaptive Management white paper
6. Begin working on Task extension work efforts and proposal, if appropriate
7. Identify hosts for 2016 Spring/Fall in-person meetings
8. Identify information dissemination strategies
9. Determine international interest in NWCC Research Meeting
10. Determine next steps to develop Individual Impacts to Population Effects white paper
11. Refine Work Plan and Action Items timelines

Work Plan Review
The current work plan was reviewed. The group discussed progress to date. A revised work plan is due to be submitted to the IEA Wind Executive Committee as soon as it can be completed. **ACTION 1**: WREN members will review revised work plan and provide comments to OA by November 30, 2015.

WREN Hub
Andrea provided a detailed summary on the continued development of WREN Hub, which is hosted on the Tethys website. A new front page is being developed, which should make it easier to get to WREN Hub. Statistics on use patterns was provided. Several requests for enhancements were made, including:

1. A way to export references – this already exists.
2. Search criteria will be expanded for the knowledge base. This will include habitat fragmentation, bird and possibly bat species.
3. Accessing archived webinars is not straightforward at this point. PNNL will modify WREN page to put link to webinars up front. Also, webinars will be hosted on YouTube shortly (though still accessible from Tethys/WREN Hub) to make them easier to connect with.
4. WREN members will use the story feature of the Hub to disseminate information on key research findings and other important information. Other options include developing specific pages that focus on programs, projects, and other WREN-specific information.
5. Include events, such as upcoming webinars, in Tethys blasts. Tethys blasts include updates on new Tethys content.

Members need to continually send reference documents for inclusion into WREN Hub, including non-peer reviewed documents, monitoring reports, theses, etc. If not in English, please provide an abstract in English. In addition, the annual Tethys peer review will be occurring in early 2016. **Members should provide PNNL with names of potential peer reviewers. ACTIONS 2 & 3:**

1. Members need to continually send reference documents for inclusion into WREN Hub
2. Members should provide names of potential peer reviewers for Tethys, which is scheduled to be conducted March 2016.

Stakeholder Surveys
The group discussed whether there was value or interest in revisiting the stakeholder survey. The survey should be WREN-specific, intended to identify what WREN has done to date and what could be done in the future, especially in the context of a proposal extension. A simple and easy to use survey, which can be hosted on WREN Hub, could be useful in informing activities that could be considered during an extension period. An online survey will be used to provide an understanding of the highest priority activities. **ACTION 4**: A simple survey will be developed the US and circulated to WREN members for review. The survey will be posted on WREN Hub. Member countries will direct their stakeholders to the survey to complete. The survey should be completed before the extension proposal is submitted to IEA Wind.

Other White Paper Topics
Writing teams have been established for two papers currently under development. With the expansion of countries participating in WREN, we discussed whether it makes sense to start work on one or two more topics, which would be scheduled for completion during the extension period. Displacement is a key issue that is not currently being addressed; however, it was noted that this could be integrated into the population paper. **ACTION 5**: Outlines need to be developed for the next papers, if not already completed. Volunteers from each writing team should work on these and have them ready for discussion at the next in-person meeting.

The next topics will include:
1. Green verses green. Volunteers to lead this activity include Hans, Roel, Sweden, and others to be determined. This paper will be tied to Task 28.
2. Cumulative impacts. Volunteers to lead this activity include Marijke, Finlay, Roel, Sinéad, and others to be determined.
3. Integration paper – which will tie the first 4 papers together
4. Ecosystem – Volunteers to lead this activity include Finlay and others to be determined.

A new topic was proposed, focused on ecosystem-based approaches. The central idea associated with this topic would be to bridge a perceived gap associated with the other white papers’ focus on impacts to populations of species. Ecosystem-based management seeks to frame impact assessment towards understanding of changes in ecosystem goods and services and associated natural capital. Implicit is the valuation of goods and services provided by ecosystems and the development of management responses that are informed by an understanding of how these values will change in response to human activities such as renewable energy production.

Increased interest in ecosystem-based approaches has been partly stimulated in Western Europe
by the adoption of regulatory frameworks that promote their consideration. The Marine Strategy Framework Directive is a good example. The utility of an ecosystem-based approach to resolving environmental conflicts arising from wind energy remains an open question that the white paper would seek to consider in detail. To be meaningful it would need to address the perceived strengths and limitations of ecosystem-based approaches to addressing environmental conflicts and identifying examples that relate specifically to energy production. The purpose and potential value of IEA developing this topic would need to be subject to further discussion and agreement. A further option might be to consider it as a sub-section within the integration paper.

**WREN Webinars**
A brief summary of the webinar series to date and proposed topics for future webinars was given by Karin. The group agreed to develop more pre-webinar notifications to increase participation. As much pre-notification as possible was encouraged. Webinars continue to be recorded and posted on the WREN Hub site at [http://tethys.pnnl.gov/environmental-webinars?content=wind](http://tethys.pnnl.gov/environmental-webinars?content=wind) and statistics from WREN Hub indicate the webinars are being downloaded. Numerous suggestions for future webinar topics were discussed. We decided to focus on four topical categories: monitoring (Dec 2015), tools development, mitigation, and compensation. Once details are identified a 2016 webinar schedule will be developed.

**ACTION 6:** Karin will circulate a table soliciting input for webinar speakers and specific topics for each category.

**Future WREN meeting hosts**
Near term hosts are as follows:

- Spring 2016 meeting – Ireland
- Fall 2016 – Netherlands. This could potentially be moved to the US to co-locate with the NWCC Research Meeting.
- Spring 2017 - Sweden

**ACTION 7:** Sinéad will send out a Doodle scheduler to assist with identifying dates for the spring WREN meeting.

**Information Dissemination**
Several mechanisms for disseminating information were discussed including developing 2-pagers to succinctly summarize white papers, using the story option within Tethys to spread information on new research findings, developing fact sheets, and creating slide decks, all of which could be easily downloaded and used as needed. Flyers on upcoming webinars, for electronic distribution within countries, should also be developed. There will likely be difference audiences thus the messaging will need to be targeted. For example, practitioners compared to policy makers will be interested in different information. During the task extension, effort will be put into developing an approach for task members to be ambassadors for the task.
activities. Press coverage could be beneficial. Story topics could include GFE (Fränzi to provide) and uncertainty (Finlay). WREN should commit to about one story per quarter, more if appropriate. Tethys blast should include notification of upcoming WREN webinars. **ACTION 8**: The US will develop and disseminate an information dissemination plan for review by November 30. Thereafter, materials will be drafted and circulated for review.

**WREN presentation in conjunction with EWEA conference**

A side meeting showcasing IEA Wind research tasks has been organized to be held in conjunction with the EWEA conference in Paris in November. No WREN members were planning to attend the EWEA conference, however Annika agreed to attend the meeting on behalf of WREN. The organizing committee has requested a short power point presentation highlighting the task accomplishments and a couple questions for use by the moderator to help get the conversation started. **ACTION 9**: Karin to provide Annika with a draft presentation and suggested questions for the EWEA side meeting by October 28.

**International Interest in NWCC Research Meeting**

Organizers of the National Wind Coordinating Collaborative Research Meeting, scheduled for November 29 – December 2, 2016, in the US, were interested in knowing if they would be able to engage more of the international community, especially with the WREN members. The NWCC organizers submitted a number of questions (see list below) for WREN to discuss. The group suggested that in order to appeal to an international audience, NWCC and the CWW conferences need to have their own profiles and engage in outreach, encourage, and emphasize significant international participation. One suggestion for this distinction is that the NWCC emphasize focus on linking between science and policy. For example, each speaker could include in their presentation what policy the science is being based on. Finally, the group suggested that having the NWCC conference at a major hub to minimize travel time from international destinations is also important.

**Adaptive Management White Paper**

Luke Feinberg led the discussion on the status of the AM paper. A draft document had been sent out ahead of the meeting. Comments were provided from numerous attendees, many of which suggested the paper still needs a lot of work. Reference to the US Department of Interior (DOI) Technical Guide on Adaptive Management was discussed, including the suggestion that the definition of AM in the Technical Guide is the one the paper should identify with. It was suggested that the feedback loop on page 5 of the Technical Guide should be included in the AM paper. The group suggested that the paper put forth the US Department of Interior (DOI) definition of adaptive management as the recommended global definition, discuss projects from around the world with regards to the degree to which they embody aspects of this definition and deviate from it, and then that the paper make recommendations for AM integration into wind
energy management. The group also suggested that the paper could better discuss adaptive management and other environmental management philosophies as policy responses to uncertainty. For peer review by IEA Wind ExCo, someone will be appointed to do this. Karin to ask Brian Smith how this is done and what lead time is needed.

**ACTIONS 10 through 13:**

1. Luke to send out DOI definition of AM. Representatives will weigh in on whether they agree that this is a definition they wish to support in the paper in its entirety or in part.
2. Luke will revise the first section of the AM document, aligning with the DOI criteria (as found on page iv of the Technical Guide).
3. Following this, Luke will send out a request for a list of projects from nations, with a description of which of the parts of the DOI definition these projects embody and which they do not, to be incorporated into later parts of the paper.
4. Karin to get information on IEA Wind ExCo peer review process for deliverables.

**Generalized Fatality Estimator**

Fränzi Nievergelt-Körner provided a presentation that included background on the status of fatality estimators and the interest in developing a generalized fatality estimator (GFE). WREN group was in favor of such a tool. WREN agreed to write a letter of support for the concept so that the GFE team could include it with future funding proposals they may submit. **ACTION 14:** OA to develop WREN letter in support of GFE concept.

**IEA Wind Task 34 extension**

Based on the overall support for the development of a proposal extension, members discussed what key activities should be included in a proposal extension. Key activities include continued development and enhancement of WREN Hub, information dissemination, webinar series, and additional white paper topics. Specific topics were suggested to include cumulative impacts, green vs green, an integration paper pulling together adaptive management, individual to population, cumulative impacts and green vs green. A fourth paper to be written during the extension period will focus on ecosystem-based management. A 4-year proposal extension will be developed, with a draft being presented during the Spring 2016 Executive Committee meeting. Markus Geissmann described Task 28 and suggested that WREN could collaborate with Task 28 on one or more of the white papers. **ACTION 15:** Develop a proposal extension for presentation in Spring 2016.

**Review of Work Package and Action Items.** Work package activities and action items were reviewed, including the request to complete and submit input for the in-kind labor table. Input should tie to the work plan commitments. **ACTION 16:** Input on the work plan activities and in-kind labor table is due to the OA by November 30, 2015.
Individual Impacts to Population Effects paper. The lead authors of this paper lead a discussion on the work completed to date. Elizabeth participated in the meeting’s discussion via phone.

Elizabeth spent 1 week in Trondheim and Muriel spent two days working with Roel to develop the draft paper. A draft paper had been circulated prior to the meeting, thus all members had reviewed it and were prepared to comment on the document. Generally, the paper was well received. Suggestions for completing the paper were provided. The introduction should be expanded to include discussion on impacts (positive and negative). Also, a discussion of density dependent models verses density independent models – which could potentially be represented in a graph to go along with text – could be included. The paper should be written for non-technical readers, and include a section on key definitions. There was concern for the use of the term no-net-loss in the context of this paper. At this time, the conclusions and recommendations are missing. The pros and cons of different thresholds should be included in the discussion section. Risk is not currently addressed in the paper. Scientific Uncertainty should be emphasized more – however this could be confused with other uses of uncertainty (for example, uncertainly in management of wind farms) so alternative words should be considered for these other uses. A 2-pager or executive summary could be developed to focus on the policy implications of the paper. The intent is to publish this paper in a peer-reviewed journal. Timing for this process as well as review by the ExCo has not been determined at this time. The paper mentions a link to the adaptive management paper. Appendix A is on the google drive of WREN. ACTIONS 17 through 20: Karin to find out from ExCo what is needed to be considered a completed document. The next draft should be available to WREN members prior to the Spring 2016 meeting in Ireland. Fact sheets on the paper should be completed before October 2016. Roel or others to find out how much lead time is needed for peer review by a journal, such as the Biological Conservation or Journal of Environmental Management.

SUMMARY OF ACTION ITEMS:

1. **WREN members** will review revised work plan and provide comments to OA by November 30, 2015.
2. **WREN members** need to continually send reference documents for inclusion into WREN Hub
3. **WREN members** should provide names of potential peer reviewers for Tethys, which is scheduled to be conducted March 2016.
4. A simple survey will be developed the US and circulated to WREN members for review. The survey will be posted on WREN Hub. Member countries will direct their stakeholders to the survey to complete. The survey should be completed before the extension proposal is submitted to IEA Wind.
5. Outlines need to be developed for the next papers, if not already completed. **Volunteers from each writing team** should work on these and have them ready for discussion at the next in-person meeting.
6. **Karin** will circulate a table soliciting input for webinar speakers and specific topics for each category.

7. **Sinéad** will send out a Doodle scheduler to assist with identifying dates for the spring WREN meeting.

8. **The US** will develop and disseminate an information dissemination plan for review by November 30.

9. **Karin** to provide Annika with a draft presentation and suggested questions for the EWEA side meeting by October 28.

10. **Luke** to send out DOI definition of AM. **Representatives** will weigh in on whether they agree that this is a definition they wish to support in the paper in its entirety or in part.

11. **Luke** will revise the first section of the AM document, aligning with the DOI criteria (as found on page iv of the Technical Guide).

12. Following this, **Luke** will send out a request for a list of projects from nations, with a description of which of the parts of the DOI definition these projects embody and which they do not, to be incorporated into later parts of the paper.

13. **Karin** to get information on IEA Wind ExCo peer review process for deliverables

14. **OA** to develop WREN letter in support of GFE concept

15. **Karin, with input from WREN members**, will develop a proposal extension for presentation in Spring 2016.

16. **WREN members** to provide input on the work plan activities and in-kind labor table to the OA by November 30, 2015.

17. **Karin** to find out from ExCo what is needed to be considered a completed document.

18. The I – P writing team will provide the next draft to WREN members prior to the Spring 2016 meeting in Ireland.

19. Fact sheets on the I - P paper should be completed before October 2016. Leads for this activity will be determined later.

20. **Roel or others** to find out how much lead time is needed for peer review by a journal, such as the Biological Conservation or Journal of Environmental Management.

21. **WREN members** should review regulatory table and provide feedback on what we should do with this information (positive and negative).

22. **Marijke** will send framework document to Andrea, then PNNL will send out link

**ATTACHMENTS:**

1. Final meeting agenda
2. WREN Hub presentation
3. Webinar series presentation
4. Generalized Fatality Estimator presentation and flyer
5. Adaptive Management presentation
6. In-kind Labor Table
ATTACHMENT 1

FINAL AGENDA
October 21 - 23, 2015
Swiss Federal Office of Energy
Bern, Switzerland

Expected outcome of meeting:
12. Share WREN Hub progress and determine next steps
13. Determine next steps to develop Individual Impacts to Population Effects white paper
14. Determine if additional white papers should be started
15. Develop additional themes/presenters for webinar series
16. Determine next steps to complete Adaptive Management white paper
17. Begin working on Task extension work efforts and proposal, if appropriate
18. Determine hosts for 2016 Spring/Fall in-person meetings
19. Determine international interest in NWCC Research Meeting
20. Refine Work Package and Action Items timelines

Day 1

9:00 Welcome
Karin/Hans
Introductions
Review Meeting Agenda

9:15 Overview of WREN and Review Current Work Package
Karin

9:45 Overview of progress on WREN Hub
Andrea
New features added since March meeting in Berlin
Statistics on use patterns, other information on Hub
Discuss/determine next steps

10:45 Break

11:00 Stakeholder Survey
Karin

11:30 Discussion of Other White Paper Topics
All
1. Green vs Green
2. Other topics?

12:30 Lunch

1:30 Webinar Series
1. Summary activities to date and proposed next topics
Karin
2. Discuss future webinar topics/presenters
All
### Spring and Fall 2016 meetings

**2:15**  Spring and Fall 2016 meetings

**2:30**  Information Dissemination

**3:00**  Break

**3:15**  WREN presentation in conjunction with EWEA conference  
Karin  
Target audience: research, industry, and policy communities.  
Date: November 19; 8:30 – 11:30

**3:20**  International Interest in NWCC Research Meeting  
Karin  
Topics of interest to the organizers:
- What are the most pressing issues/topics related to wind energy (or renewables more generally) and wildlife in your country/region right now?
- What topics would be of most interest to learn about at a meeting focused on wind-wildlife science and research?
- How has international coordination/cooperation helped you advance your work on wind-wildlife in your own country? What types of information exchange have you found most valuable?
- Are there any logistical considerations that would impact your ability and interest in attending the Wind Wildlife Research Meeting, to take place in the US, November 29-December 2, 2016 (e.g., location; travel costs; length; etc.)?
- If you attended the CWW meeting in March, 2015, what were the best/most interesting aspects of that meeting?

**3:45**  Adaptive Management White Paper  
Jocelyn/Luke  
Update and overview of progress made to date  
Feedback on draft  
Plans for completion, peer review, and publication

**5:30**  Adjourn

Group dinner
Day 2

8:30  Review Day 1  
      Karin

8:45  Generalized Estimator proposal discussion  
      Fränzi Nievergelt-Körner

9:30  IEA Wind Task 34 extension  
      Karin
      Key Task activities
      Member Interest/Commitment
      Timeline needed to complete (1 – 4 years)
      Link with Task 28  
      Markus

10:30  Break

10:45  Begin to develop detailed Task extension language  
      Determine next steps for Task extension  
      Karin

11:15  Review Work Package and Action Items  
      In-Kind table  
      Karin

12:30  Lunch

1:30  Individual Impacts to Population Effects paper  
      Hans/Finlay/Roel
      Overview of progress made to date
      Summary of draft paper
      Discuss questions posed by authors
      Plans for completion, including schedule

3:15  Break

3:30  Continued discuss of Individual Impacts to Population Effects paper

5:00  Adjourn

Day 3

Jura excursion – to visit a small wind farm in the Jura mountains (le Peuchapatte) where the Swiss Ornithological Institute and private company are conducting a study on bird and bat fatalities on behalf of the Swiss Federal Office of Energy and the Federal Office for the Environment. Dr. Felix Liechti, one of project leaders, will describe the research methods and objectives of the project, as well as give us general information on how bird and bat conservation organizations in Switzerland deal with the upcoming development of wind energy. We will also learn about how specific agricultural practices can be used as mitigation measures for the Red Kite, a raptor frequently colliding with wind turbines.