Water Works 2015-2020 in Support of the Water JPI ERA-NET Cofund Action

WATER-3-2015: Stepping up EU research and innovation cooperation in the water area

2019 Water JPI Knowledge Hub Workshop #3 with Seed Group Report

(WP7, Task 7.1)

April 2019

OUTPUT SUMMARY	
Project Information	
Project Title:	Water Works 2016-2020 in Support of the Water JPI (WaterWorks2015) - Sustainable water use in agriculture, to increase water use efficiency and reduce soil and water pollution
Project Acronym:	WaterWorks2015
Call Identifier:	WATER-3-2015: Stepping up EU research and innovation cooperation in the water area
Contract Number:	689271
Starting Date:	01/01/2016
End Date:	31/12/2020
Web-Site Address:	http://www.waterjpi.eu/
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Deliverable Title:	2019 Water JPI Knowledge Hub Workshop 3 Report
Deliverable Number:	Internal Deliverable
Work Package:	WP 7
WP leader:	Alice Wemaere / Lisa Sheils EPA
Nature:	Proceedings
Dissemination:	Public
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Date of Delivery:	30th April 2019

Disclaimer

Acknowledgments

The Water JPI has received funding from the European Union's Horizon 2020 Programme for Research, Technological Development and Demonstration under Grant Agreement n°689271 (WaterWorks2015). We also wish to acknowledge the invaluable contribution from all of the invited workshop speakers and attendees, the WaterWorks2015 ERA-NET Cofund partners, the Water JPI Governing Board (GB), as well as the European Commission funding.

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List of Abbreviations

AEI : Agencia Estatal de Investigación (Spain)

AMR : Antimicrobial Resistance

ANR : Agence Nationale de la Recherche (France)

ASTEE : The Association scientifique et technique pour l'eau et l'environnement (France)

CEC: Contaminants of Emerging Concern

COST: European Cooperation in Science and Technology

EPA: Environment Protection Agency of Ireland

FORMAS: Swedish Research Council Formas (Sweden)

GB: Governing Board

GLEON: The Global Lake Ecological Observatory Network

IC4Water: Coordination and Support Action in support of the Water JPI

ICRA: Institut Català de Recerca de l'Aigua

ISPRA: Italian National Institute for Environmental Protection and Research

JPI: Joint Programming Initiative

KH: Knowledge Hub

KHCEC: Knowledge Hub on Emerging Pollutants

NORMAN: Network of Reference Laboratories, Research Centres and Related Organisations for Monitoring of Emerging Environmental Substances

NMBU: Norwegian University of Life Science

PBT: Persistent, Bio-accumulative and Toxic

RDI: Research, Development and Innovation

SRIA: Strategic Research and Innovation Agenda

SWAM: Swedish Agency for Marine and Water Management

ToR: Terms of Reference

UCD: University College Dublin (Ireland)

Water JPI: Joint Programming Initiative

Executive Summary

This report contains the proceedings of the **third Knowledge Hub Workshop** with the seed group of the Water Joint Programming Initiative (Water JPI). The establishment of a Knowledge Hub (KH) is part of one of the additional activities of the ERA-NET Cofund program WaterWorks2015.

The aim of the Water JPI Knowledge Hub is to build a network for **selected research groups and which is targeted at stakeholders**. The network will, **within a specific research area**, establish a critical mass of research and technological excellence, integration and sharing of knowledge, infrastructures, data and modelling tools, training and capacity building, in addition to improved communication and networking with stakeholders and the scientific community.

The purpose of the third Workshop was to discuss the progress achieved to date by the Knowledge Hub on Emerging Pollutants (KHEP) including activities and outputs (e.g. KHEP implementation plan, 1st policy brief), and to stimulate discussions on its future focus (business plan), priorities and potential role of the initiative. Two breakout sessions were planned for the afternoon with the objectives of agreeing on a common terminology and definitions, categorizing Contaminants of Emerging Concern (CEC), identifying communication challenges and how best to utilise the seed group.

The workshop took place in Madrid on the 26th of March 2019 with 24 attendees in total, mainly made up of the existing KHEP seed group and also some members of the steering committee and some funding partners of the Water JPI. The list of participants is provided in Annex I.

The main aims were to:

- Discuss with the group in plenary how the seed Group can develop a business plan to sustain the legacy of the KHEP after February 2020 (original end date of the activity).
- Each of the attending seed Group experts presented on their national scenarios regarding national knowledge exchanges and best practice communication activities, that exist.
- Breakout sessions were undertaken to gain consensus on common terms and topics, the group should use going forward and agree on a shared communication approach.

The key points captured at the meeting were as follows:

1. Common terminology: it was agreed by the seed group to use the wording/term **Contaminants of Emerging Concern**, instead of Emerging Pollutants. In that regard, it was suggested to adopt the name of the KH from "KH on Emerging Pollutants" (KH-EP) to "KH on Contaminants of Emerging Concern" (KH-CEC). As a consequence, the name KHCEC is used from now on to replace KHEP.
2. Sustaining the KHCEC post February 2020;
    a. It was agreed that the current structure works and if possible, should be maintained following February 2020.
3. Achieving the KHCEC goals and create impact;
    a. More stakeholder participation is needed. Suggestions and recommendation were made by the seed group on the best way to accomplish this – for example by inviting stakeholders to participate in the workshops or provide feedback, use of 'Ted Talk'

type videos to targeted stakeholders and defining a common language base in all outputs.

4. The draft Implementation Plan will be updated based on feedback from the workshop.
5. The urgent need for an online facilitation tool was also discussed as this would enable more internal communication between KHCEC members, in turn allowing improved engagement within the group and greater exchange of information, ideas and knowledge, as well as streamline and quicken up any review process required, for example the Implementation plan or Policy briefs, etc. 'Howspace' will be the tool trialled initially, considering the experience done during the IC4Water Workshop held in Paris in February 2019 for launching a second Water JPI KH dedicated to UN Sustainable Development Goals.

1. Introduction

1.1. Water Joint Programming Initiative

The Water Joint Programming Initiative, Water JPI (www.waterjpi.eu), entitled "Water Challenges for a Changing World", was launched in 2010 and was later formally approved by the European Council in December 2011. As of March 2019, the Water JPI membership included a total of 23 member countries and three observer countries, which collectively represent 88% of European public research, development and innovation investment in water resources. The Water JPI is dedicated to tackling the ambitious grand challenge of achieving "*sustainable water systems for a sustainable economy in Europe and abroad*".

As a result of coordination activities, Water JPI member countries have approved as of June 2016, a second version of the common Strategic Research and Innovation Agenda (SRIA) that lays down RDI priorities for the following 5 scientific themes:

1. Maintaining Ecosystem Sustainability;
2. Developing Safe Water Systems for the Citizens;
3. Promoting Competitiveness in the Water Industry;
4. Implementing a Water-Wise Bio-Based Economy; and,
5. Closing the Water Cycle Gap.

1.2. ERA-NET Cofund WaterWorks2015

Within the ERA-NET Cofund programme WaterWorks2015, the Work Package 7 is focusing on Water JPI **alignment activities**. Alignment should enable the optimal use of national research funds.

Water JPI partners have identified several actions to attain alignment activities. Some of these actions are finalised or ongoing (e.g. joint foresight, mapping of European RDI actors in the field of water, the approval of a common SRIA, the writing-up and update of an implementation plan, the launch of stakeholder consultations, cooperation between JPIs, and set-up of a **Knowledge Hub**) whereas others are planned in the near future (e.g. training of researchers, and the shared use of RDI infrastructure).

A "knowledge hub" is understood to be a "network consisting of selected research groups within a defined area of research. The added value of the Knowledge Hub includes the establishment of a critical mass of research and technological excellence, the integration and sharing of knowledge, infrastructure, data and modelling tools, training and capacity building, as well as improved communication and networking with stakeholders and the scientific community" (**WaterWorks2015, Work Package 7, Task 7.1**).

WaterWorks2015 has had three out of four Knowledge Hub workshops (with seed group) to date and a number of meetings/ networking events in 2018 (Helsinki Water JPI Conference, June and Cyprus, Side Event at XENOWACII conference, October 2018); A preliminary workshop was held on 22 March

2017 in Dublin (Ireland) with the objective of defining the vision and operational/ managerial aspects of the Knowledge Hub, by setting the conditions for the launch of this first Water JPI Knowledge Hub. The first workshop's main objective was to launch the Knowledge Hub on Emerging Pollutants (March 2018, Stockholm). The overall aim with this workshop was to discuss how the efficiency and effectiveness of the Water JPI Community activities could be improved based on the question: Can we do more with what we have? The seed group experts and the Knowledge Hub Steering Committee met in Helsinki on 5 June 2018 for a second workshop with the objective of identifying possible areas for Policy Briefs.

The objectives of the third workshop entitled 'Planning and Progress' (March 26th, Madrid 2019 was threefold:

1. to start planning the development of a robust business plan to sustain the knowledge hub post February 2020,
2. exchange knowledge of best practice communication activities in each participating country and
3. to realise the implementation plan by gaining a consensus on terms and topics and agreement on a communication approach.

A process to review the progress of the Knowledge Hub will be undertaken in 2019. A second Knowledge Hub is currently been developed under the IC4WATER Coordination and Support Action, in support of the implementation of the Water JPI, for focussing on the development of such tool in the international / global context. Lessons learned from WaterWorks2015 Knowledge Hub will be brought into play to this one.

1.3. Aims of this Report

This report contains the Proceedings of the 2019 Workshop of the Water JPI Knowledge Hub on Contaminants of Emerging Concern held on 26 March 2019. The report and the master presentations are available on a webpage dedicated to the Water JPI Knowledge Hub.

This report is organised as follows:

- **Section 1** provides an introduction and background to the Water JPI and Knowledge Hubs
- **Section 2** provides an overview of the methodology of the workshop;
- **Section 3** provides an introduction to the Knowledge Hub Activities and Outputs;
- **Section 4** provides the results of the plenary session;
- **Section 5** provides the best practice knowledge exchange from the seed group; and
- **Section 6** provides the results of the breakout sessions.

2. Methodology

The 2019 Water JPI Knowledge Hub Workshop was organised by FORMAS (Sweden), with the support of EPA (Ireland), the WaterWorks2015 partners, in particular AEI (Spain), and the Water JPI Secretariat. This section is to set out the aims and objectives of the workshop including the theme, attendees invited, and the outline of the programme both plenary and breakout sessions.

2.1. Workshop Aims and Objectives

The objectives of this third workshop, 'Planning and Progress', were to plan for sustainability of the knowledge hub by building a robust business plan, exchange knowledge of best practice communication activities in each participating country and realise the implementation plan by:

- Discussing how the seed Group can develop a business plan to sustain the legacy of the KHCEC after February 2020.
- Discuss the various national scenarios presented by the attending seed group members on knowledge exchange best practice communication activities and discuss best practice.
- Gain consensus on the use of common terms and topics and agree on a communication approach and in turn update the Implementation plan.

2.3. Workshop Attendees

The workshop brought together 24 attendees in total, mainly made up of the existing KHCEC seed-group and also some members of the KHCEC steering committee (funding partners), and additional Water JPI members. The full list of participants is provided in **Annex I**. There were nine members of the seed group from eight countries, who participated throughout the day.

2.4. Workshop Programme

The workshop programme was planned in order to stimulate productive and open discussions among the participants. The workshop included an introductory session to set the scene followed by seed group presentations, a plenary session and two breakout sessions. The plenary session was chaired by Norbert Kreuzinger, the KH Scientific coordinator, (TU Wien, Vienna). Each of the national seed group members gave a short presentation on their national examples of how knowledge is exchanged and what practices are used to communicate outputs in their respective countries. There were two breakout sessions during the workshop which were focused on gaining insight and start working with the Seed Group as part of the first phase of the KHCEC implementation plan. The detailed programme is provided in **Annex 2**.

2.4.2 Session 2: Planning for Sustainability (Plenary)

Kristina Laurell presented on the final agreed Terms of Reference (ToRs) and activities during 2017 and 2018 and finally the timetable thus far of the KHCEC. The plenary session provided an introduction to the development of a business plan to ensure the sustainability of the Knowledge Hub. A number of set questions were posed to the group and discussion points captured to inform the development of a document outlining the needs proposed by the seed Group to continue the KHCEC into the future.

2.4.3 Session 3: Seed Group Knowledge Exchange of Best Practice Communication Activities to Stakeholders

Norbert Kreuzinger opened the session with a brief overview of best practice communication activities. The presentation highlighted the importance of stakeholder communication in order to reach the KH goals and impact. The seed group members were invited to present on 'Knowledge Exchange Best Practices of Communication' within their respective countries. See Section 3 for details.

2.4.4 Session 4: Realising the Implementation Plan

Session 4 was introduced by Norbert Kreuzinger. Norbert gave an overview of the implementation plan, which has already been reviewed by both the Seed Group and Steering Committee and how the findings of the workshop would directly feed into the final implementation plan. Note this plan is a 'living plan' and will have the flexibility to change as required into the future. Norbert also presented on the next steps and work planned, for the group. Two group work sessions were undertaken as part of session 4. This updated implementation plan will be included as an information item for the next Water JPI GB meeting May 23rd, 2019.

In Session 4a workshop participants were asked to consider;

- The different terms which would be important to define within the KHCEC to ensure the seed group had a common understanding;
- How the topics of interest to the KHCEC could be categorised, in particular under the heading of Contaminants of Emerging Concern (CECs), which had been previously identified as the main focus of the KHCEC.

And in session 4b, the participants were asked to:

- Identify communication challenges and barriers as well as solutions
- Determine how the seed group can be best utilised

The workshop participants were split into two working groups, each with two rapporteurs.

2.4.5 Summary Session

Norbert Kreuzinger, KH Scientific coordinator, summarised the main discussion points and conclusions from the plenary session and two working groups. see section 6 for details.

2.4.6 Closing of the meeting

Dominique Darmendrail, Water JPI Coordinator, closed the meeting with conclusions from the sessions around the need to finalise the implementation plan and to source online discussion tools to facilitate open discussion and review within the KH.

3. Session 1 – Introduction to the Knowledge Hub Activities and Outputs

3.1 Welcome and Introduction

Norbert Kreuzinger, KH Scientific coordinator, (TU Wien, Vienna), gave a general introduction into the KHCEC current set-up and activities. Norbert mentioned the near finalisation of the implementation plan and how the findings of the workshop in Madrid would feed into the final plan. He also highlighted the need to develop a business plan in order to sustain the KHCEC after February 2020. As part of the proceedings, seed group members were invited to present on knowledge exchange of best practices communication activities to stakeholders on emerging pollutants in their respective countries. Norbert emphasised the importance of initiating and maintaining stakeholder engagement in order to reach the KH goals and create real tangible impact.

Norbert introduced the aims and objectives of the workshop and what the workshop expectations were.

3.2 KHCEC support

Rachel Clarke, KH facilitator, (Intrigo, Ireland), gave a brief presentation on the role of the KHCEC facilitator. The facilitator's main role is to support the KHCEC's coordinator as well as the seed group in developing outputs and communicating them. The presentation also highlighted the importance of internal (enabling regular progress updates and communication within the KHCEC members and with the Steering Committee via Formas the Chair and task leader) and external communication by promoting KHCEC and its objectives, partners, funding, and activities, employing a range of communication and dissemination tools, between the facilitator and the other members of the KHCEC.

3.3 First KH Policy Brief Overview

Kristina Laurell & Karin Montgomery, (Formas), presented on the 1st policy brief for the group and the development process of such. Kristina presented on the development process to produce the first policy brief and how the KHCEC workshop on themes provided valuable direction. The 1st policy brief has gone through several revisions and reviews with the seed group members and the steering committee. This final version following this 3rd KH workshop will be sent for final approval to the Water JPI GB meeting taking place in Berlin on May 23rd, 2019.

Karin presented on the process for developing future policy briefs, and in particular the 2nd one for the Water JPI and suggested that the development and decision of the theme for the next policy brief should be agreed between the seed group and steering committee. Karin also went on to say that a sub-group should be formed consisting of interested seed group members and a chair to develop the

content. The review process would consist of selected experts within the seed group to keep the process moving along. The final version would be reviewed by all and agreed and then presented to the Water JPI GB for approval in November 2019.

4. Session 2 – Planning for Sustainability (Plenary)

4.1 Terms of Reference (ToRs) Presentation and Agreement

Kristina Laurell opened the session and presented on the final and agreed Terms of Reference (ToRs). The activities thus far of the KH include a workshop to launch the emerging pollutants Knowledge Hub (KHCEC) which was held on the 15th March 2018, Stockholm, KH workshop #2 in Helsinki on 6th June 2018, a JPI side event in Cyprus October 2018, and this KH workshop 26th March 2019.This workshop is critical with the expected outputs and added value of all meetings feeding into the Implementation plan and the future business plan. The next steps are to agree on the Implementation plan. This will be a 'living document' and with the aim of widening the membership over the next 24 months. A 'Call for Expression of Interest' to Join the Knowledge Hub will be launched at Water JPI level.

4.2 Developing a Robust Business Plan

Norbert Kreuzinger introduced the group discussion on how the **seed group can approach ensuring the legacy and sustainability of the KHCEC following February 2020**. Three questions were posed to the seed group and discussion points were captured to inform the development of a document outlining the needs proposed by the seed group to continue the Knowledge hub into the future. This draft business plan will be presented to the Water JPI GB, as an item for discussion, at their next meeting May 23rd, 2019 in Berlin. Results of the plenary session are summarised in Table 1. The questions included:

(1) Is the current structure working? Is it sufficient? e.g. additional support was provided to help with communication, facilitation etc., is this enough?

(2) What is needed to continue this work after February 2020? e.g. are there other resources required? What could help increase/speed up output development?

(3) What does the KH look like in the future, e.g. consider: Management of the organisation (supports – communication; facilitator); roles and responsibilities (Coordinator; Experts etc); Obtaining Buy-in/interest; type of organisation (standalone; linked etc); timeline for such KH.

Table 1 provides a summary of key points resulting from the plenary session. It was agreed that the current KHCEC working structure was good. A coordinator, communications support and an administrative facilitator, all worked well. However, there were concerns regarding a number of future issues arose, such as:

- Funding post February 2020. – for the KH group and the three support mechanisms currently in place.
- Could the KHCEC introduce other countries into the KHCEC and how to do this?
- Would Norbert still act as scientific coordinator of the seed group/ experts?

A number of recommendations and suggestions were put forward. Such as future funding sources from the Water JPI or similar programmes such as COST and introducing a sub group.

Some seed group members expressed concern regarding the volume of emails received and having the time to read them. To alleviate the amount of emails received, a KH newsletter was suggested. The newsletter should be informative yet, succinct and get straight to the point. There was also discussion regarding the use of a digital facilitation platform. It would enable increased and better internal communication and speed up such things as reviewing process.

More stakeholder interaction/communication is needed within the KHCEC. Some seed group members stressed that there was not enough. In addition, it was difficult to target the key stakeholders (i.e. policy makers, industry etc). The development of regional groups or thematic mirror groups would spread the KHCEC and take away full onus of the responsibilities from the seed group. The Water JPI advisory boards (The Scientific and Technological Board and The Stakeholders Advisory Group) should also be involved more and future develop 'hot topics'. This would help to set agendas and focus.

Table 1. Summary results of plenary session

(1)	**All members agreed that the current structure is working and should be maintained post February 2020 if the funding will permit.**
(2)	**Having a dedicated KH newsletter outlining KH updates would be of more use as a means of internal communication.**
(3)	**There is a critical need for a digital facilitation platform/ forum e.g. 'How space'.**
(4)	**Virtual meetings (i.e. WebEx) would facilitate more seed group and steering committee participation.**
(5)	**More key stakeholder involvement and feedback into the KH – invite stakeholders to the KH workshops – have a 2-way conversation on needs and how to deliver impact.**
(6)	**To sustain the KH post February 2020, funding could be sought from JPI, COST Action or nationally.**
(7)	**More emphasis on dissemination of outputs (e.g. 'State of the Art' Literature Review) rather than on drafting of policy briefs.**
(8)	**The need to develop regional groups/mirror groups – lots of good examples demonstrated at National and Regional level e.g. Scandinavian region.**
(9)	**The Advisory Board should be involved more for instance as a focus group that could develop 'hot topics' to steer the seed group in the right direction.**
(10)	**There is a need to ensure that the draft Robust plan being collated will be pragmatic and sustainable.**

5. Session 3 – Seed Group Knowledge Exchange of Best Practice Communication Activities to Stakeholders

Norbert **Kreuzinger** opened session 3 with a presentation on **'Seed Group Knowledge Exchange of Best Practice Communication Activities to Stakeholders'.** The presentation highlighted the importance of communicating with stakeholders as an indicator of success of the KH. Each of the attending seed group members were invited to present on **'Knowledge Exchange of Best Practice Communication' within their respective countries.** Nine members of the seed group presented (Table 2) and included;

Table 2 List of seed group members that presented on knowledge exchange practices National scenarios

Researcher	Country
Norbert Kreuzinger	Austria
Kirsti Loukola-Ruskeeniemi	Finland
Don Pierson	Sweden
Valeria Dulio	France
Karin Wiberg	Sweden
Kevin Jewell	Germany
Henning Sørum	Norway
Serge Chiron	France
Enda Cummins	Ireland

Each member gave a perspective into the knowledge exchange best practices on communication activities on Emerging Pollutants to stakeholders.

(a) Finland

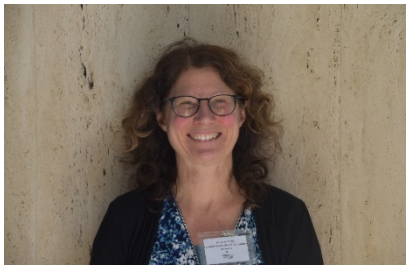
Kirsti Loukola-Ruskeeniemi from the Geological Survey of Finland presented the overview of the knowledge exchange practices in Finland. Finland participates in the Nordic Screening initiative that includes 10 workshops and 10 screening studies of emerging pollutants. Future work in Finland involves screening of emerging pollutants (regulated and non-regulated) from many countries using one lab, trend detection from sediment cores to reveal "recent fate" for "novel" PBT substances and greater effort on statutory monitoring of regulated substances to be extended to groups of substances. The regional collaboration was very evident from Kristi's talk and an example to consider for the KH.

(b) Sweden (Uppsala)

Don Pierson researcher at the Department of Ecology and Genetics, Limnology, Uppsala University presented of the knowledge exchange practices in Sweden. The Global Lake Ecological Monitoring Network (GLEON) is a network of researchers involved in lake monitoring. There are more than 500 members in 49 countries. The network adopts a 'bottom up' approach and priorities and projects determined by working group and ad hoc discussions at annual meetings. Another strong example of very good practice to follow.

(c) France and Beyond

Valeria Dulio Executive Secretary of the NORMAN network, INERIS, National knowledge exchange practices on emerging contaminates of concern. The French National Action Plan on micropollutants (2016-2021) evaluates all kinds of contaminants with a special focus on emerging contaminants. The plan has key actions that are relevant to the KH that include: pursuing the development and update of platforms for chemicals data, capitalise on international studies and experience about health and environmental risks regarding micropollutants in water, rank chemicals based on the need for environmental knowledge and capitalise on international studies & experience. Other activities include a 'Scientific Watch' of nationally- and EU-funded projects on micropollutants & emerging contaminants, organisation of scientific conferences (national & international level) and promoting the launch of funding research programmes (national & EU projects) to address knowledge gaps about micropollutants in the environment. NORMAN is a long-standing successful network.

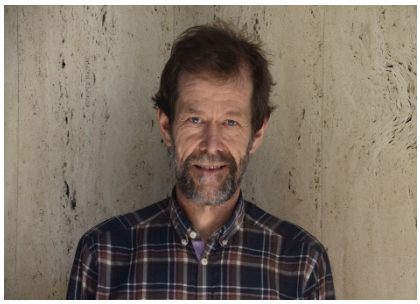


(d) Sweden

Karin Wiberg researcher at the Swedish University of Agricultural Sciences (SLU) presented on the main well-developed hubs of communication on emerging contaminants of concern in Sweden. The main hubs for communication are with the Swedish Water & Wastewater Association (SWWA) and DRICKS –the drinking water (DW) SWWA cluster. Both associations are in close collaboration with key stakeholders and disseminate information and working material as one core task. Workshops and seminars are regularly held, and newsletters are circulated among members. Other major hubs of communication involve agencies such as the Swedish EPA, Swedish Chemicals agency, National Food Agency, Geological Survey Sweden, Swedish Agency for Marine and Water Management (SwAM), Formas and academia. Again, excellent collaborative networks demonstrated.

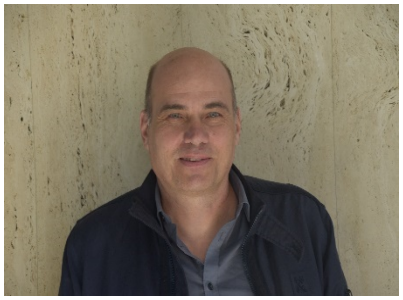
(e) Germany

Kevin Jewell a researcher with the Federal Institute of Hydrology, Germany presented on the various knowledge exchange processes in Germany. The main communication networks regarding emerging contaminants of concern comprises of several key stakeholders and include the German Waste and Wastewater association (DWA), German Water and Gas Association (DVGW), Water working group of the German states) Working groups (LAWA), Water chemistry society (of the GDCh), River basin associations (FGG Rhein, FGG Elbe) and the International commissions for river protection (IKSR, IKSE). The DWA promotes the research and disseminating of information and collaborates with the experts working in the field of emerging contaminants. The DWA are an important source of information to the Berlin Ministries. The KA8.1 is a working group within the DWA and they are proactive in researching and writing relevant theme issues around emerging contaminants of concern. Suggestions for increasing communication within the KH include the development of a collaborative style website, (wiki) on emerging contaminants/water quality and the production of an article/white paper for periodical/established website.



(f) Norway

Henning Sørum of the Norwegian University of Life Sciences, Norway presented an overview of the knowledge exchange practices in Norway. Research institutions have separate media-related employees that promote research projects at the research institutions. The research institutions send press releases to different stake-holders to inform of research key findings. Most information is communicated through local media channels as it is the easiest and effective way to communicate. Suggested recommendations for communicating KH outputs include informing stakeholders through novel information channels and in parallel with traditional information channels, innovative solutions and novel products should primarily be communicated to the engineering companies, the city and community departments. A good example of 2-way stakeholder communication was illustrated.



(g) France (Montpellier University)

Serge Chiron a researcher from the Montpellier University, France, presented on the two main communication channels in France. The Association scientifique et technique pour l'eau et l'environnement (ASTEE) and the French Water Cluster – Aqua Valley to promote collaborations between business and academia. Communication is normally conducted through traditional media. Communication between academia and key stakeholders is usually via participation in stakeholder associations, workshops. Water lab (local researcher/administration-led platform for interaction with users of technologies, services and policy makers) and publication published by ASTEE. Large industries such as Veolia and Suez also provide research and training chairs. Illustrating the importance of industrial linkage.

(h) Ireland

Enda Cummins, a researcher in University College Dublin, presented on the knowledge exchange practices in Ireland. The main stakeholders are Irish Water, Local Authorities, Ireland EPA and relevant Government departments. Other stakeholders include the Food Safety Authority, National Federation of Group Water Schemes, general public and the academic community. Communication channels are open between stakeholders and project advisory groups depending on the funding stream. The main communication channels come from within public media (i.e. TV and National radio) and publishing of project synthesis and final reports by funding agencies. Considerations for the communication KH outputs include adopting SMART (Specific, Measurable, Achievable, Realistic and Time bound), establishing a website, including industry and the use of newsletters.

Additionally, It was noted by Lisa Sheils (EPA) during the discussion that the recently established Irish Water Forum (website http://nationalwaterforum.ie/), representing NGOs and the public , and platforms such as www.catchments.ie and the EPA WFD Application are key platforms used to disseminate outputs and exchange information on water quality issues in Ireland.

6. Session 4 – Realising the Implementation Plan

6.1 Overview of the Implementation Plan

Norbert Kreuzinger opened session 4 with an overview into the current state of play of the KH implementation plan, work done so far and planned future work. The overview included a reminder of the four phases of the KHCEC Implementation Plan as follows;

Table 3. Four phases of the Implementation Plan

Phase one 'setting the scene':

- **Definition of a common language base**
- **Categorisation of the complex CEC topic**
- **Identification of priority areas / topics to be addressed as well as respective Stakeholder Groups**
- **Identification of potential outputs**

Phase two, 'the players and communication':

- **Identification of strategic partners**

- **Identification of knowledge exchange structures and mechanisms needed to reach the different stakeholder / end-user groups**
- **Implementation of the knowledge exchange structures**
- **Identification of roles and responsibilities within the seed group**

Phase three, 'outputs':

- **Elaboration of end-user / stakeholder-oriented outputs**
- **Communication of outputs**
- **Evaluation of impact**

and phase four 'internal evaluation':

- **Review of activities**
- **Lessons learned**

6.2 Session 4a – Breakout session 1- Gain Consensus on Terms and Topics

For the breakout sessions, seed group members were placed into two groups and each group was assigned two rapporteurs. After 30 minutes, the rapporteurs switched groups to ensure all members had an opportunity to be involved at all stages (Table 4).

Table 4 Breakout session working group members and rapporteurs

Working Group No.	Members	Rapporteur
1	Kirsti Loukola-Ruskeeniemi Don Pierson Valeria Dulio Kristof Demeestere Maja Kolar Miguel Ángel Pierre-Francois Staub	Rachel Clarke Kristina Laurell
2	Dominique Darmendrail Esther Chacón Ignasi Rodriguez Roda Karin Wiberg Kevin Jewell Henning Sørum Serge Chiron Enda Cummins	Lisa Sheils Simon Coulet

The first session (4a) was **on terms and topics**. Norbert Kreuzinger presented the seed group members with a list of questions designed to initiate a good discussion. The groups were asked to consider the

terminology and definitions currently used, in the KHCEC. It is important for the seed group to agree on a common terminology as it can reduce any misunderstandings when developing outputs. It is also important in terms of communicating to a broad stakeholder group that there is an agreed terminology to describe emerging contaminants/pollutants. The following aspects were discussed:

- what is the understanding of terms, Emerging" (e.g. does a substance stay "emerging" if effect is known and regulation is in place?
- what terminology should be used Pollutant vs. Contaminant?
- how should terms be defined Risk & "potential to pose risk"?
- how can the same term be communicated to unaware vs involved people?

The groups were also asked to consider the categorisation of 'Contaminants of Emerging Concern' (CECs). Categorising contaminants of emerging concerns can put the KH on the right trajectory in terms of realising the implementation plan. The following questions were put to the seed group to stimulate conversation.

- How can we consider categorising CECs e.g. by Modes of Action; Source (pharmaceutical, pesticides etc)?
- Effect (e.g. affecting human health or environment health etc)? How can we look at prioritising these categories in terms of what the KH should focus on first?

The following prompts were used to give the group more focus:

- Chemical properties and behaviour in environment? (POP, adsorption, easily degradable, …)
- Field of application? (pharmaceuticals, pesticides, industrial, …)
- Mode of action? (endocrine, carcinogenic, mutagenic, unknown, …)
- According to transport pathways and sinks (road; household, agriculture, …)
- Origin? (natural, anthropogenic, metabolites, …)
- Concentrations and occurrence in the environment?
- A mixture of all?

Results

Discussion on agreeing terminology centred around the use of the word contaminant in the EU legislation; Some seed group members commented that antimicrobial resistance (AMR) should not be confused with contaminants or pollutants, as it is an actual consequence of overuse of these compounds. Other comments were around the issue of translating in other languages, for example, the word contaminant is not recognised in Sweden, and there is no direct translation into Spanish for pollutants, but there is for contaminants. Some seed group members agreed that it was important to use common EU language that is written in the actual legislation, such as the Water Framework Directive (WFD). However, the WFD uses the word 'pollutant', should the terminology stay in line with this? All agreed that using terms that are well established in existing collaborative networks such as NORMAN, such be used as this is the norm, otherwise confusion arise.

Result/Main Outcome: The consensus from the seed group members was to use the phrase 'contaminant of emerging concern' CECs and replacing emerging pollutants as it was considerably more widely used in the EU.

Key points from the discussion are as follows;

Table 5 Key points from breakout session on terminology 4a

1. **In principle it was agreed that a common sense and simplified and consistent use of terms, that are easily translated into non-English, should be adhered to.**
2. **Various national legislation documents use 'contaminant'; however, the word 'pollutant' is used widely in the Water Framework Directive. This is area that may still have discussion**
3. **Must be a term that is widely understood by policymakers and the public.**
4. **Simplify language in line with legislation.**
5. **'Contaminant' is used by other well established and strong networks such the NORMAN Network and US Environmental Protection Agency, therefore has more commonality.**
6. **The consensus from the seed group members was to rename the KH to KHCECs by using the phrase 'contaminant of emerging concern' CECs and replacing emerging pollutants.**

The discussion on **categorising CEC's** centred around defining contaminants and pathways. Seed group members in general, thought it was a difficult question/topic to categorise as how does one prioritise so many contaminants/pollutants and pathways? The list of CECs' is infinite as well as the sources/pathways. Some seed groups members mentioned the circular economy and the 'new' pathways that are introduced to close the loop. To narrow down CEC's and pathways, it was suggested to construct an environmental matrix to evaluate source, behaviour, and mode of action of CEC's. Defining CEC's also proved difficult for the seed group members as when does a CEC become a legacy CEC? There was no immediate action resulting from the discussion, therefore further discussion among seed group members is needed to establish what CEC's to prioritise.

The following key points from the discussion are:

Table 6 Key points from Breakout session on categorising CECs 4a

1. **The circular economy is a growing area and can introduce new pathways for contaminants into the environment, i.e. release of metals following extraction. Needs to be developed further.**
2. **Evaluation of various matrices (soil, surface water, groundwater, air) can help to categorise contaminants by environmental behaviour and mode of action.**
3. **There is a need to not only consider the changing contaminants rather the change in the physical environment due to climate change. Extreme weather events must also be considered when categorising contaminants.**
4. **Within the natural environment emerging contaminants of new concern- evasive species emitting natural toxins.**
5. **Need for meta-categories/groups and risk category/assessment.**

6.3 Session 4b – Breakout Session 2 - Identify communication challenges and barriers as well as solutions

As part of session 4b, breakout session 2, the groups were asked to **identify communication challenges and barriers as well as solutions**. The core idea of the knowledge hub is a bidirectional communication between individual stakeholders on national level up to science. The groups were asked to consider:

- How could results from national projects be made available for the hub and its tasks?
- How to communicate to countries which are not covered by the seed group? and
- how could the impact of information from the hub be made more relevant for stakeholders?

The groups were also asked to consider the utilisation of the seed group.

- How exactly should the seed group contribute to the communication (bidirectional), details on national situations (experts & projects available; structures, stakeholders etc), expert knowledge, policy and network nodes.

There was also discussion on identifying communication challenges and barriers centred around peer reviewed literature, language barriers and lack of response from key stakeholders. Some seed members stressed that there was not enough access to 'grey literature' and this impeded their access to data. Other seed group members said that they would not rely on such sources as they would only trust peer reviewed papers. As there are 23 countries involved in the Water JPI (full members, + 3 observers and 5 additional countries participating in specific activities), writing and reviewing documents can prove to be difficult especially if English is not your first language. Some seed group members see this as a challenge and barrier going forward. A common language is needed for terminology. Other points made were the need for a dedicated webpage/site where information can be uploaded or accessed. It was agreed that stakeholder participation can be very poor. An idea was to target the stakeholder by using 'Ted talk' type videos or roadshows.

Table 7 Key points from Breakout session 4b on communication challenges

1. **Access to grey literature has been discussed as a barrier. A list of organisations should be provided that has grey literature (. i.e. EU Commission reports). However, some members stressed that they would not trust this source of information and prefer to use peer review.**
2. **There is a common language barrier regarding dissemination of information. This can be overcome by using one terminology and the use of Google translate or DeepL.**
3. **It was recommended that there should be a dedicated webpage on the Water JPI website (currently I, to t is not very visible) or a KH standalone one is needed to spread the KH word.**
4. **Tools such as using infographics to communicate with key messages, would be beneficial and engage a wider audience**

5. **Undertake a questionnaire/monkey survey to target stakeholder groups, so identify their needs and what they want from the KH.**
6. **Produce 'Ted Talk' type videos or roadshows, bringing information to targeted stakeholders.**
7. **Need to implement 'open data source policy' to provide access to restricted data (e.g. health data).**

The discussion on utilising the seed group included a 'Scientific Watch' similar to the NORMAN approach and bulletin, looking at key and emerging issues on a regular basis and providing information on such ; producing a 'state of the art' literature review to avoid duplication and in turn feed can feed into current Water JPi Strategic Research and Innovation Agenda (SRIA). Other points raised included developing a sub group/mirror group of the original seed group. Information can be fed to the subgroup, who in turn would filter information to the main group. Presenting outputs at a National level was also suggested and getting early stage researchers involved in the KH.

Table 8 Key points from Breakout session 4b on utilising the seed group

1. **Introduce a subgroup/mirror group from the main seed group to filter information to the main group..**
2. **Platform to allow live revision change.**
3. **Develop a 'scientific watch' on CECs**
4. **Producing a 'state of the art' review.**
5. **Presenting at National scientific conferences.**
6. **Bring National and early stage research ideas/data into KH.**

7. Closing of the meeting

Dominique Darmendrail, Water JPI Coordinator, closed the meeting and reflected on some of the key points of the meeting.

- The KHCEC is closer to finalising the implementation plan following from the workshop feedback.
- The 1st Knowledge Hub policy brief is finalised and the 'Who's Who' will be completed on time for final approval by the GB in May 2019.
- The Knowledge Hub Terms of Reference (ToRs) have been finalised and will serve for the future KH activities of the Water JPI.
- A business plan will now be drafted based on the workshop discussions and the future sustainability will be presented to the GB in May 2019 for discussion.
- The experience on this KH has shown that we changed of approach with bottom-up inputs by the seed group and top-down requests of the Water JPI via the KH steering committee.
- Nevertheless, we all agree that the KH is a tool for creating and increasing impacts, with the communication of evidence / science – based knowledge.

- New tools seem to be needed to communicate and create a common platform to work. Suggestions included the KH newsletter, the online digital facilitation platform, 'how space' or a collaborative website such as a 'Wiki', in addition of the Intranet pages. This would facilitate better communication within the KHCEC.
- On some of additional suggestions (how to involve more researchers in each country? how to have / increase exchanges with stakeholders / end-users to answer to their demands and needs? Communications plans vs. connection channels to press, TV / radios? How to implement an efficient scientific watch?) will need to be discussed further on, as it will impact the current operational model.

8. Conclusions and Implementation

The aims and objectives of the third KH workshop in Madrid on the 26th March 2019 were to plan for sustainability of the knowledge hub by building a robust business plan, exchange knowledge of best practice communication activities in each participating country and realise the implementation plan. As one of the most significant outcomes the strong opinion was stated to **change the name of the KH from KH on Emerging Pollutants to KH on Contaminants of Emerging Concern**.

The plenary session on **how the seed group can approach ensuring the legacy and sustainability of the KHCEC post February 2020** proved to be very useful as it gave the seed group members an opportunity to have their say on how the KH is being currently run, but also how they see the KH in the future. Some of the key points from the plenary session include the development of a dedicated newsletter to keep seed group members better informed of KH activities, use of virtual meetings (i.e. Skype) as a tool to allow more seed group members access to meetings that they cannot attend in person, and more stakeholder participation is needed to enhance and direct the reach the KHCEC's goals. Participating seed group members were invited to exchange knowledge of Best Practice.

Communication Activities to Stakeholders in their respective countries. Most countries represented had an established network of stakeholder engagement regarding emerging pollutants / CECs, particularly countries like Sweden, Finland, Germany and France showing strong stakeholder communication. The focus of the breakout sessions was to establish communication consistency which included determining a common terminology, categorising CEC's, identifying communication challenges and barriers and how best to utilise the seed group. Some of the key points from the breakout sessions were to agree on the terminology 'Contaminants of Emerging Concern' (CECs) instead of emerging pollutants. Language can be a barrier among the various participating countries, more stakeholder participation is needed and/or feedback into the KH. A dedicated web page would help information to flow among KHCEC members.

There was no consensus on the topic of categorising CEC's as seed group members thought that there were too many contaminants of concern to categorise. Dominique Darmendrail closed the meeting

and remarked that there are needs for the KH to be a balanced approach between the JPI water and seed group. The use of online tools such as 'how space' or 'Wiki' would facilitate more internal communication within the KHCEC and speed up the process of reviewing as an example. A vote was taken, and it was decided that the next meeting should be held in Dublin on the 24th October 2019 as it coincides with the Experts Workshop on the Strategic Research Innovation Agenda (SRIA), taking place in Dublin on October 22 and 23rd 2019. The Seed Group will be invited to attend this workshop also if they wish to attend.

9. Next Steps

The next steps are:

- To finalise the implementation plan
- Develop the business plan based on the key points from the plenary session
- Incorporate the 'How Space' digital facilitation platform to allow more communication among KHCEC members
- Plan the next meeting for October 24th, 2019
- Engage key stakeholders
- Develop a 'State of the Art' Review

AOB

A photography session followed shortly to finalise the draft 'who's who' directory developed by Formas, of the experts involved in the KHCEC seed group. All workshop participants were asked to sign a consent form, in line with the Water JPI Privacy Policy and compliance under GDPR.

Annex 1: List of Attendees

First Name	Last Name	Organisation	Country
Esther	Chacon	MINECO/AEI	Spain
Serge	Chiron	Montpellier University	France
Enda	Cummins	UCD	Ireland
Dominique	Darmendrail	Water JPI Coordinator	France
Anna	Di Noi	ISPRA	Italy
Valeria	Dulio	INERIS	France
Maja	Kolar	MINECO/AEI	Spain
Kristina	Laurell	FORMAS	Sweden
Javier	Marugán	Universidad Rey Juan Carlos	Spain
Don	Pierson	Uppsala University	Sweden
Lisa	Sheils	EPA	Ireland
Rachel	Clarke	Intrigo	Ireland
Simon	Coulet	ANR	France
Kristof	Demesteere	Ghent University	Belgium
Miguel.A	Gilarranz	AEI	Spain
Kevin	Jewell	Federal Institute of Hydrology	Germany
Norbert	Kruezinger	Technische Universität Wien	Austria
Corrine	Le Gal Le Salle	Universite de Nimes	France
Kirsti	Loukola- Ruskeeniemi	Geological Survey of Finland	Finland
Karin	Montgomery	Formas	Sweden
Ignasi	Rodriguez Roda	ICRA	Spain
Rune Henning	Sørum	NMBU Veterinærhøgskolen	Norway
Pierre-Francois	Staub	French Agency for Biodiversity	France
Karin	Wiberg	Swedish University of Agricultural Science	Sweden

Annex 2: Programme

09:00 - 09:30	**Participant Registration**
09:30 – 10:00	Session 1: Knowledge Hub Activities and Outputs *Facilitator: KHEP Scientific Coordinator* 1. *Welcome Address* 2. *Knowledge Hub on Emerging Pollutants Support* 3. *1st Knowledge Hub Policy Brief Overview*
10:00 – 10:45	Session 2: Planning for Sustainability *Facilitator: KHEP Chair & Steering Committee* 1. *TORs presentation and agreement* 2. *Developing a Robust Business Plan*
10:45 – 11:15	**Coffee**
11:15 – 12:45	Session 3: Seed Group Knowledge Exchange of Best Practice Communication Activities *Facilitator: KHEP Seed Group*
12:45 – 13:00	Photo Session
13:00 – 14:00	**Lunch**
14:00 – 16:45	Session 4: Realising the Implementation Plan *Facilitator: KHEP Scientific Coordinator* 1. *Overview of the Implementation Plan, including phases, work done so far and planned for the near future* 2. *Facilitated work to cover:* • *Review and evaluate Phase 1 work drafted so far, including:* ○ *Agree on terminology and agreed definitions in order to have a common language and understanding of the topic.* ○ *Categorisation of the complex CEC topic* • *Identify communication challenges and barriers as well as solutions, for example* ○ *Communicating to member states which aren't covered by the Seed Group* • *Utilising the Seed Group* ○ *Creating sub-groups within the Seed Group on specific topics* • *Agreeing timelines, tasks and responsibilities for planned activities*
15:30 – 16:00	**Coffee (as part of Session 4)**
16:45 – 17:00	Closing remarks