

# IERE RWE Technology Scouting project on Hydrogen

**Invitation for the project to all IERE members**

RWE

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# Invitation Letter

Dear IERE member,

Utilities and companies active in the energy market facing challenges due to the manifold paradigm change in their core markets and all over the world. New opportunities arise also either based on the push of the increasing speed of technology innovation and the creation of new value pools due to the pull of adapting regulatory frameworks and the customer demand.

The entire hydrogen value chain receives more and more popularity based on the increasing demand in decarbonisation, Power-to-X solutions and fuel supply - in many different sectors like mobility, energy and industrial processes.

The number and sizes of projects are currently increasing all over the world, using different technologies from different suppliers under different regulatory framework conditions. Studies like “The future of Hydrogen” (IEA 2019) give good overviews of technologies and policies but they are often lacking in specific lessons learned from project developers, operators and manufactures and this in comparison of the individual framework conditions.

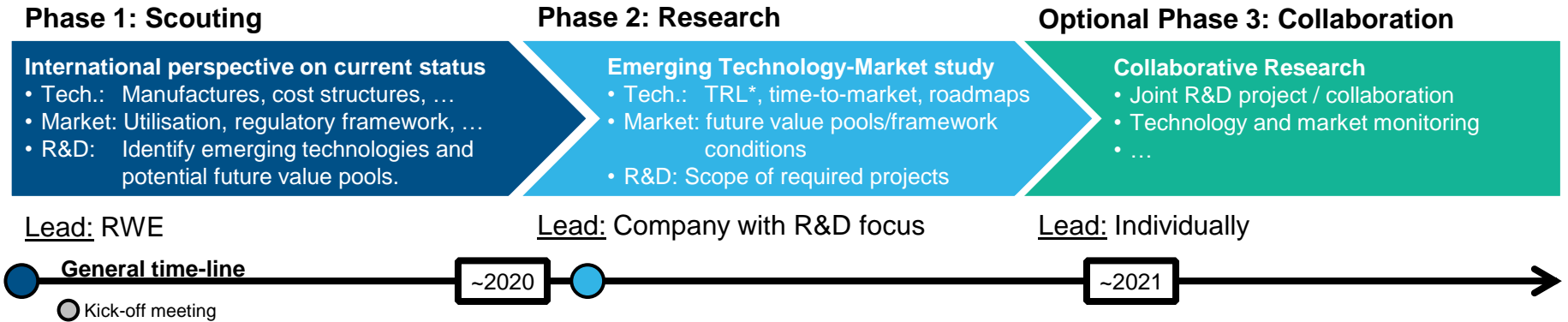
IERE members across the world made or are currently building up this experience along the hydrogen value chain, too. This great level of know-how in the IERE network should be used to prepare and get a state-of-the-art technology – market perspective with key technology and regulatory drivers in order to understand everyone’s individual position and business opportunities in the hydrogen market. Do you know what kind of technology is used in a different place on earth and why? Would it be probably also suitable in your core region? Why do some technologies develop faster than others and what can everyone learn from different political/regulatory frameworks?

Based on the questionnaire according the IERE Technology Foresight project 2019 from May 15<sup>th</sup>, 2019 we have seen, that approx. 10 IERE member companies are interested in the hydrogen technologies (long distance hydrogen transport and storage, Solid Oxide Fuel Cell / Solid Oxide Electrolyzer (SOFC/SOEC) as well as biological hydrogen production from biomass/waste. This topic has been announced as an in-depth research activity within the IERE member community.

We, RWE, believe, that this in-depth research on hydrogen would be a valuable exchange within IERE members and we would like to start this research with a Scouting project on the current status of hydrogen and ask you to contribute with your expertise, technology and/or market know-how on current technology-market combinations and opportunities.

Therefore we would like to ask all members again and invite you to the Scouting project as a starting phase of the in-depth research with the clear focus on current project developments, opportunities and regulatory frameworks.

**The setup of the full “in-depth” research on hydrogen is:**



**Participants:** Representatives of IERE member companies, who have willingness to share know-how and actively contribute with expertise.

**Results:** All information provided within the project are transparent to the participants and the final results shall be presented to all IERE members (e.g. at Brisbane meeting).

**Due date:** Everyone, who wants to participate and contribute to the project and wants to join the kick-off meeting shall reply to IERE central office until September 6<sup>th</sup>, 2019 so that we can start the preparation of the kick-off meeting.

# Phase 1: Scouting on hydrogen

## Goal of phase 1:

- Develop international state of the art “technology – market“ perspective from industries for industries.
- Show current technology solutions, cost structures and – reduction potential and value pools in different locations/countries on the base of political/regulatory frameworks and product utilisation.
- Provide indications of further research focus and R&D projects.

## Scope of phase 1:

- The phase will be organized in 4 and 1 optional working packages (WP) and the participants can select, where they can contribute most (@ min. in 1 WP).
- The **working packages** will consist of
  1. Hydrogen production technologies,
  2. Transport and storage technologies,
  3. Utilisation and value pools (3.1 Utilisation technologies and products; 3.2 Industrial sectors) as well as
  4. National/regional funding schemes and political/regulatory framework.

Optional: Overview and key messages of national development programs / roadmaps from e.g. general studies

## What's in for you:

- Build up a hydrogen specific international network within IERE with companies having a stake in this business.
- Receive technology - market insights from international industries for industries you might miss with your current focus.

# Technology - Market Evaluation on Hydrogen worldwide – members select working package/s (WP) where they can contribute most

## Technologies

**WP 1** **Production of Hydrogen**  
 AE, PEM, AEM, HTE, ...  
 Technologies, TRL\*, manufactures, operators/projects, parameters, synergies, innovation/TtM\*\*, economics

**WP 2** **Transportation / Storage**  
 Physical / material based technologies, TRL, manufactures, operators/projects, performance parameters, synergies, innovation/TtM, economics

**WP 3.1** **Utilisation**  
 H<sub>2</sub>, O<sub>2</sub>  
 Quantities, quality specs., innovation/TtM, economics

## Market

**WP 3.2** **Market PULL**  
 Demand in hydrogen  
 (sectors, industries, locations, ...)

**WP 4** **Market PUSH**  
 National / regional funding schemes  
 (Political / Regulatory framework)

**WP Opt.** **National programs/ roadmaps**  
 Drivers for hydrogen  
 e.g. “Net zero”, “Energy Future 2050”, ...

# RWE offers to take the lead with support of IERE central office and phase 1 shall finish by end of 2019.

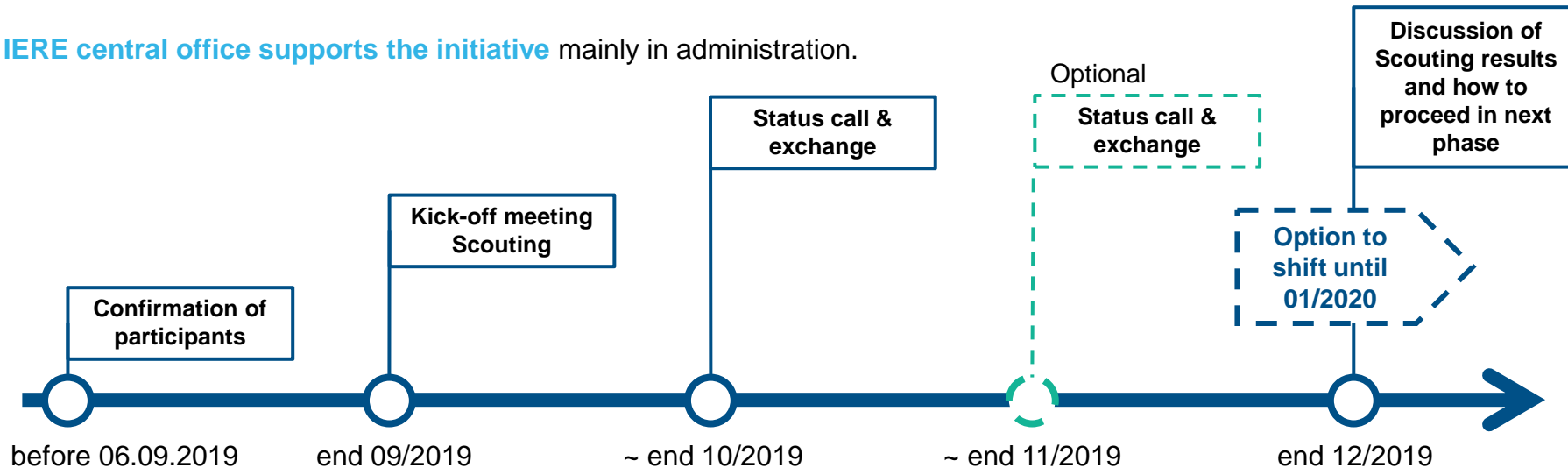
**RWE takes the lead** of phase 1 with:

Formal lead (IERE member): Ingo Birnkraut, RWE Technology International

Technology Expert: Dr. Sebastian Heuer, RWE Technology International

General coordination: Dr. Max Voss, RWE Generation SE

**IERE central office supports the initiative** mainly in administration.



# We expect 10 or more IERE member companies to participate in phase 1.

**indicatively** Share of IERE members  
0 → 100%

**ALL IERE MEMBERS**

Interested in H<sub>2</sub> based on  
IERE questionnaire  
(~10 members)

**Invitation to phase 1 of in-depth research**

Expected confirmation of  
participation

Invitation to kick-off,  
recipients of further details

**Information about final results at the end of the  
project (e.g. at Brisbane meeting).**

## Project organisation

Lead

**RWE**

Support

**IERE**

Participants in  
working package 1

Participants in  
working package 2

Participants in  
working package 3

Participants in  
working package 4

Participants in optional working package

**SUBJECT TO FEEDBACK OF IERE MEMBERS**

# The kick-off meeting shall be used for setting the right focus and clarify open issues.

## Draft Agenda of the kick-off meeting:

- Welcome and Introduction (ALL - who you are and which stake you have in hydrogen topics) 30 min
- Introduction of phase 1: Scouting on hydrogen (RWE) 30 min
- Open issues (Q&A) 60 min
- Discussion, e.g. 120 min
  - Focus topics in working packages and level of details
  - Deliverables, Process of further activities

## Potential open issues:

- Does everyone understand the goal of phase 1 and agree with the scope of phase 1?
- Does everyone agree of having no confidentiality agreement?
- Discussion on the general level of details of information contributing to the phase 1 in order to foster
  - equally valuable information in the working packages and
  - ability to be used for phase 2 of in-depth research.

## Own preparation: Every participant shall prepare

- an overview of why being qualified for contribution and current stake/position in the hydrogen topic,
- a summary of key questions / suggestions for the kick-off meeting concerning organisation, scope and goal.



# Next steps: Confirmation of contribution and ability to join the kick-off meeting

## Confirmation of your participation until **06.09.2019**

- Company confirmation of general contribution to the project
- Confirmation and nomination of a person (or more) who shall attend the kick-off meeting
- Attendance physically or video call

**Meeting type:** Physical meeting and video call

**Location:** RWE Generation SE, 45128 Essen, Germany

**Date:** **Kick-off in alignment with participants and preferably at end of September 2019**  
The date will be confirmed after getting availability information of participants.

**Time:** **08:30 a.m. – 12:30 p.m. (Central European Summer Time)** with respect to time shift  
We offer lunch and the opportunity for further talks if required.

Please reply your attendance



**Thank you very much  
for your attention!**

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