
Trainer for Green Hydrogen and Power-to-X Production Training for Project Developers and Technical Project Managers in India

Project number/cost center: 23.9007.8-013.00

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1. General information

1.1 Project description

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) was commissioned by the Federal Ministry for Economic Affairs and Climate Action (BMWK) with the implementation of the International Hydrogen Ramp-up Program (H2Uppp). The H2Uppp program accompanies and supports efforts to ramp up the market for green hydrogen (H2) and power-to-X (PtX) applications in selected developing countries and emerging economies in cooperation with the private sector. Unlike other H2 support initiatives, H2Uppp focuses on the early stages of green H2 and PtX project development.

The objective of the project is to seize the opportunities of green H2 and PtX by aiming at identifying production and deployment opportunities, exploring pathways, and supporting the realization of project ideas and business models in developing markets and emerging economies. This project will therefore foster innovation, knowledge transfer and eventually support the scaling of production and use of green H2 and PtX while strengthening the position of German/European technology providers as leading innovators in developing countries and emerging economies.

1.2 Objectives

Many countries throughout the world are turning to green H2 and its derivatives to achieve the climate change objectives in the Paris Agreement. Industries such as steel, chemicals and

(long-haul) aviation are particularly important to consider in the context of decarbonization initiatives. Green H₂ and PtX (technologies) are increasingly crucial for reaching the climate change objectives in these sectors.

The objective of the project is to strengthen the knowledge of project developers and technical project managers on production of green hydrogen and Power-to-X (PtX) through a training at an international level that covers different aspects, such as renewable energy and hydrogen generation potentials, technology, economics, plant design, and regulation.

The aim is to generate knowledge for the attendance to the development of projects, for technical dimensioning, as well as for the technical and economic evaluation of projects.

The training is designed to support project idea development and project preparation for green hydrogen and PtX production in India, and then help training participants to identify and evaluate the technical design and economic potentials of various green hydrogen and PtX projects. Therefore, the training participants receive knowledge on project development, technical sizing, and technical and economic evaluation of H₂/PtX projects.

2. Tasks to be performed by the contractor

The concept of this training has already been developed and will be provided to the contractor. Information about the training sessions is described in the following and in chapter 2.2.

Part of these ToRs are mainly:

- Kick-off workshop with GIZ & transfer session (WP1)
- Familiarization with the training concept and the provided learning materials (2.2 WP2)
- Development of country specific content for the training (2.3 WP3).
- Extension of the existing training guideline by development of methodology and didactic training approach to enhance active participation. (2.4 WP4)
- Execution of six 3-day trainings of 2 trainers incl. site visit in person in 6 different cities in India (2.5 WP5)
 - Delhi, Kochi, Mumbai, Pune, Chennai, Gandhinagar. (These are preliminary chosen cities, exact cities with dates will be agreed during Kick-off meeting)

Information about the training and sessions

- Training topic: Green Hydrogen and Power-to-X Production Training
- Language of training (and slides): English
- Format: 3-day on-site training with 10 training sessions for 15 hours training and a site visit.
- Two trainers/experts shall perform the training.
- The training materials consist of different modules with content on hydrogen and PtX technology and costs, and on project development that can be applied independently from country's context.
- The trainer / experts shall provide country specific content by using their own slides
- A total of about 350 slides will be provided, whereby for the 3 day training 220 slides divided into 10 session are foreseen. The additional 130 slides will cover 3 extra session for a 4 day training version, which can be used during the training if necessary from the trainer's perspective.
- Training material includes a technical and economic calculation tool for a basic hydrogen production plant.

- The trainers will receive a training guideline and learning videos explaining the concept, the technical concept and the calculation tool (2,5hrs). No full train of the trainers included.

Information about the attendance

- The group size for the training is about 20 participants. **GIZ supports gender diversity and encourages the participation of women in the training programme.**
- Participants are project developers and technical project managers with different backgrounds: engineers, economists, etc. of the private sector, representing different companies.
- The training considers that the participants have basic knowledge of green hydrogen and PtX.

The contractor is responsible for providing the following work packages:

2.1 WP 1: Kick-off workshop with GIZ

In a first step, the contractor shall conduct exchanges with representatives of GIZ in order to discuss

- the already existing training concept as well as
- the content of the already existing training material/slides which will be provided by GIZ.

Therefore, a (online) kick-off workshop with the GIZ (2 - 3 hours) shall be carried out at the beginning of the project.

Additionally, part of WP1 is one transfer session lasting 2 hours, for an exchange with GIZ who provides the training concept and the slides. The transfer session is intended for discussion during or after familiarization with the provided training concept and the provided slides with common content (WP2). These transfer sessions serve the contractor for further questions and guidance. Within this transfer, GIZ is available to give practical guidance to the contractor on how the training concept / material and the Excel tool will be used.

2.2 WP 2: Familiarization with the training concept and the provided learning materials

For this working package GIZ will provide:

1. Information on the training concept containing:
 - Training guideline incl.
 - the design of the training with the didactic concept
 - the time schedule of the training, as well as the planning of the training units (sessions)
 - instructions for the execution of the training and for the trainers
 - learning videos
2. The training material including:
 - a slide desk with two versions (participant version & trainer version with includes additional comments regarding key messages in the slides note field)
 - an excel calculation tool for hydrogen production including a guidance for its usage
 - other training materials, e.g., a literature list on PtX and green hydrogen

The training content has been prepared on approximately 350 slides (220 for a 3-day training) in such a way that the instructor can deliver it to a very diverse audience with different

backgrounds. The whole training materials will be provided in English and will be compatible with standard MS Office applications and is editable.

The contractor must familiarize himself with these slides as part of this work package, review each slide and adapt if necessary to national requirements and may complement the material with other material relevant in the Indian context (alternative calculations tools). The trainers have to be able to present the entire material confidently when executing the training (WP 3). In the following, the scope of the training sessions and their contents are presented.

The training is planned with 3 training days. Thus, a total of 10 sessions of 1.5 hours each are scheduled, resulting in 15 hours of face-to-face instructions. Additional time is planned for self-learning and preparation of the participants (e.g., preparation of an example of a project case).

The following material will be provided to the contractor at the beginning of the project in English:

- The training concept with the didactic concept, the time schedule of the training, as well as the planning of the training units (sessions).
- A slide desk with two versions (participant version/training version). This includes
 - approximately 100 slides for common, generic training content
 - approximately 20-25 placeholder slides for country specific content.
- Exemplary elaboration of the country specific content for one country for support/orientation.
- An Excel calculation tool for hydrogen production including a guidance for its usage
- Other training materials, e.g., a literature list on PtX and green hydrogen
- An overview graphic and a guideline on how the modules are built on each other.

Overview of contents of the training sessions which are to be executed by the contractor during the training

The following contents will be taught on the respective days or sessions. Depending on the participants and their background and knowledge, the trainer shall specify 10 of the 16 available sessions accordingly. The chosen sessions need approval by GIZ.

Session 1 “General - introduction to hydrogen and PtX” includes the introduction of trainers and participants as well as an overview of the whole training and an introduction to hydrogen and PtX. Additional session, which is not foreseen for the 3 day training version. However, the trainer can share own slides regarding the country specific input if he wants –

Session 2 “Country specific introduction to hydrogen and PtX” includes different aspects of green H₂ and its derivatives for the country, like regulations and markets, as well as site assessment aspects like potentials, infrastructure, local industries. For this session only placeholder slides will be provided, and the content has to be developed as part of WP3.

Session 3, 4, and 5 “Technology and cost: for electrolysis, for derivatives, and for storage and transport” includes technical aspects and supply chain overview, as well as finance and economic aspects (CAPEX, OPEX) for these technologies.

Session 6 “Sustainability aspects of green hydrogen and PtX products and certification” includes aspects of sustainability and requirements for the certification of green hydrogen and

PtX products within Europe and internationally. This session addresses the main steps of a certification process and the certification criteria.

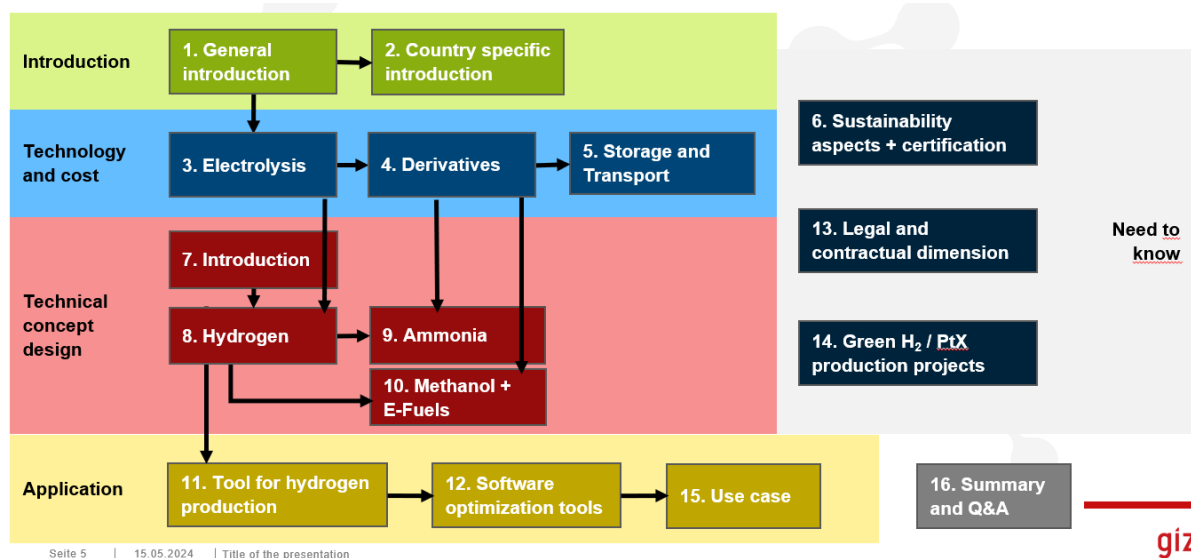
Session 7, 8, 9, and 10 consider the “Technical concept design” for production, storage, and transport of hydrogen, ammonia, methanol, or syncrude starting with the methodology for the design of production projects. Further aspects are site selection regarding different aspects, sizing of plant and asset optimization, and operation for the different products.

In session 11 a “Excel tool for H₂ production plant” will be provided. This is a technical and economical calculation tool for a simplified hydrogen production plant. The session includes an introduction to the structure and use of the tool as well as calculation of some examples (will be provided).

In addition, session 12 includes a comparison of different software optimization tools. Possible software tools will be discussed within the kick-off workshop

Session 13 “Legal and contractual dimension” and session 14 “Green H₂ / PtX production projects” includes further aspects which are necessary to know for developing projects. Contents are e.g., typical project development phases and their specifics, project stakeholders, key aspects of financing, agreements, risks.

Session 15 “Individual project case” is a practical session with an exercise for the participants. They have to calculate and evaluate her own project cases. As an alternative, project cases provided by the trainers will be examined.



The training ends with Session 16 “Summary and Q&A”.

2.3 WP 3: Development of country specific content

The country specific content for the training must be developed by the contractor. It is about renewable energies and PtX resources, existing infrastructure and local industry, and the export infrastructure (existing ports and pipelines) of the target country as well as country specific regulations. Input from GIZ shall be considered.

The contractor has to develop an additional 20-25 slides which can be included in the existing training concept / materials. Here for the contractor is provided with the full training materials including approximately 20-25 placeholder slides (on PowerPoint) in English, which sum up

the content of which has to be worked out for the respective / target country. In addition to the content, the slides also contain suggestions and exemplary tools for developing the topics and content. In addition, an exemplary elaboration of the country-specific content for one country is provided for support/orientation.

The contractor has to develop these country specific slides in English and accordingly to the existing training material in two versions. One slide deck for the participants and one version with additional comments for the trainers. Both slide decks will be handed over to GIZ.

In addition, further hints are provided on which topics are helpful for familiarization and preparation of the trainer.

The following content has to be developed in this work package with special focus on the Indian state where the training is held:

- Sharing of experience with first local GH₂ production projects.
- Total primary energy supply by source (over the years), electricity demand
- Renewable energy target and PV and wind energy development in the target country
- The role of green H₂ and its derivatives in decarbonizing the country
- Current status, barriers, and benefits of the markets for green H₂ and PtX in the country.
- Country specific regulations for hydrogen: national strategies or roadmaps, hydrogen policies, legislation, and standards
- Country and state specific support scheme mechanism
- Local RE sources (wind, PV, others)
 - In a first step: Time series based potential analysis, local site effects, ...
- Further resources (water, CO₂, N, others)
- Water availability / access to water (inland water, seawater (desalination))
- State specific restrictions (protected areas, missing infrastructure, unsuitable areas)
- Information on existing power grid
- Industrial infrastructure; local industries (potential consumers)
- Information on CO₂ sources
- Existing infrastructure for transport: railway, road network, airports, port infrastructure: deep-water port (if applicable)
- Identifying the PtX resources with “PtX Atlas” (PtX site assessment): evaluation of electricity production via photovoltaics, evaluation of electricity production via wind power plants, evaluation of production and costs of H₂ and PtX, export options and costs,
- Local Stakeholders
- Local demands and sectors for future PtX applications

2.4 WP4: Development of methodology and didactic training approach to enhance active participation.

The aim of this WP is to further develop the existing training guideline, which is provided by GIZ. The existing training guideline focuses on the description of the individual sessions and the interaction between the different sessions and mentions different time schedules for shorter and longer training versions. Also, the guideline provides an example for a “Quiz” as interactive training element. However, for future training execution the active participation of the attendees should be encouraged with further interactive elements.

The interactive elements should be designed in such a way that they build a red thread through the complete training. This could be for example dividing all participants in different groups from the beginning and let them build up virtual GH2 companies that compete with each other during the training. But the possibilities are not limited to this. As part of this WP, the contractor will suggest different approaches / ideas to encourage active participation through the training and discuss with GIZ before these are worked out in detail.

As a result, the contractor needs to either to extend the existing training guideline or to deliver an additional / separate one focusing on the didactic concept as a word document (min 10 pages).

Also, different energizers to further enhance participation should be included in the training concept.

2.5 WP5: Execution of the training

The aim of this work package is to execute the 3-day training including a site visit in 6 different cities in India. The training shall be executed by the two experts, see chapter 4.

The tasks of the trainer team are as follows:

Before the training:

- Check training material for up-to-dateness.
- Vetting of CVs of the applicants to ensure the selection of the most suitable participants who meet the specified criteria for the training program.
- Prepare a short questionnaire to find out the participants prior knowledge on the subject of PtX (for example, by sending a query by mail to the participants). Choose sessions based on knowledge, background and experience of participants accordingly.
- Structuring the 3-day training and exercises based on the training material provided and the training concept.
- Make training materials available to participants (on a learning platform, if applicable).
- At least 2 weeks before training: suggest 3 different possible site visits in the area of the training venue with relevance to Green Hydrogen or PtX production.
- For the site visit: gathering of useful information on the site before the visit.

During the training

- Conduct a 3-day seminar (Presentation of slides and teaching content) including site visit.
- Introductions of trainers and participants plus asking participants about their expectations of face-to-face classes and their motivation to participate in the course.
- Perform (group) exercises including the usage of calculation tools and others.
- Integrate interactive elements into training (for example, asking the participants questions about the training content).
- Give participants the opportunity for follow-up questions and discussions.
- Provide feedback questionnaire to participants and collect feedback from participants and evaluate feedback.

After the training

- Own reflection on instruction and considering ideas for modifications for the next course.

The date for the trainings will be coordinated with GIZ at the beginning of the project.

2.6 Milestones

Certain milestones, as laid out in the table below, are to be achieved by certain dates during the contract term:

Deliverable	Milestones and Deadlines	Estimated expert days for orientation
WP 1: Kick-off workshop with GIZ, briefing and debriefing	Latest 4 weeks after contract signing	12 (for both trainers)
WP 2: Familiarization, review, adaption, complementation of training materials	at least 2 weeks before the first training	
WP3: Development of country specific content	at least 3 weeks before the first training	6 (for both trainers)
WP4: Development of methodology and didactic training approach to enhance active participation.	4 weeks after contract signing	4 (for both trainers)
WP 5: Execution of six trainings in the country (including preparation & local travel)	2 trainings in 2024, 2 trainings in 2025, 2 training in 2026	36 (for both trainers)

Training weeks: **exact dates will be coordinated at Kick-off workshop.**

Period of assignment: **From 01.10.2024 until 31.10.2026.**

3. Concept

In the bid, the bidder is required to show how the objectives defined in Chapter 2 are to be achieved, if applicable under consideration of further specific method-related requirements (technical-methodological concept).

Technical-methodological concept

Strategy: The bidder is required to consider the tasks to be performed with reference to the objectives of the services put out to tender (see Chapter 1). Following this, the bidder presents and justifies the strategy with which it intends to provide the services for which it is responsible (see Chapter 2).

The bidder is required to describe the key **processes** for the services for which it is responsible and create a schedule that describes how the services according to Chapter 2 are to be provided. In particular, the bidder is required to describe the necessary work steps and, if applicable, take account of the milestones and contributions of other actors in accordance with Chapter 2. The bidder shall prepare a project plan including proposed training dates and cite in India. The bidder is required to describe its backstopping concept including the managing adaptations to changing conditions in regards to the two proposed trainers (backstopping expert)

Criteria for Eligibility of firms

The bidder must have the following administrative and financial requirements for conducting the assignment.

I. Commercial Eligibility Assessment

- Be registered as a national organization or entity.
- In case of bidding in consortium, please declare the same and follow the process mentioned in bidding conditions.
- Average annual turnover for the last three financial years should be at least 50,000 Euros.
- The agency should have average no.10 employees and managers in the past three calendar years.

II. Technical Eligibility Assessment

- The bidder must have at least 1 reference project as an experience of trainer for green hydrogen and/or PtX project developer trainings and at least 1 reference project in India in last three years with minimum commission value of Euro 5,000.
Please refer [InforEuro, the exchange rate of the Euro currency \(europa.eu\)](https://ec.europa.eu/economy_finance/db_indicators) for exchange rate.

III. Weighted Criteria.

- **Technical Experience**
 - Experience in the Indian green hydrogen market
 - Experience in giving technical project developer trainings for green hydrogen and PtX projects
 - Experience in cost modelling of hydrogen and ammonia in India
- **Regional Experience:** Experience of India.

Bidders must submit documentary evidence of all the criteria mentioned above. Kindly refer to Annex-A of bidding condition for more details on submission of documents.

4. Personnel concept

The bidder is required to provide personnel, two trainers, who are suited to filling the positions described, on the basis of their CVs (see Chapter 7), the range of tasks involved and the required qualifications.

The below specified qualifications represent the requirements to reach the maximum number of points.

The two trainers (1 team leader, 1 expert) can be employees of equal hierarchy within the company.

Team leader – Trainer 1

Tasks of the team leader

- Overall responsibility for the advisory packages of the contractor (quality and deadlines)

- Coordinating and ensuring communication with GIZ, partners and others involved in the project
- Personnel management
- Regular reporting in accordance with deadlines

Qualifications of the team leader

- Education/training (2.1.1): University qualification (German 'Diplom'/Master) in university qualification (Master or equivalent) in Renewable Energy studies, Energy Economics, Econometrics or any other relevant field
- Language (2.1.2): Very good business language skills in English (Mandatory requirement)
- General professional experience (2.1.3): 4 years of professional experience in the area of green hydrogen or PtX
- Specific professional experience (2.1.4): 2 years of professional experience in Green Hydrogen and/or PtX cost modelling
- Leadership/management experience (2.1.5): 4 years of management/leadership experience as project team leader or manager in a company
- Regional experience (2.1.6): 5 years of experience in projects in India
- Other (2.1.8): Experience as trainer for Green Hydrogen and/or PtX production trainings

Expert 1 -Trainer 2

Tasks of expert 1

- Supporting in preparation of the training and all WPs
- The expert 1 shall be able to present all training sessions.

Qualifications of expert 1

- Education/training (2.2.1): with university qualification (Master or equivalent) in Renewable Energy studies, Energy Economics, Econometrics, Power Management or any other relevant field
- Language (2.2.2): Very good business language skills in English (Mandatory requirement)
- General professional experience (2.2.3): 8 years of professional experience in the area of renewable energies
- Specific professional experience (2.2.4): 4 years of professional experience in Green Hydrogen and/or PtX sector
- Regional experience (2.2.6): 5 years of experience in projects in India
- Other (2.2.8): Experience as trainer for Green Hydrogen and/or PtX production trainings

5. Costing requirement

Please provide costing based on following

WP1 & WP2: Kick-off Workshop and transfer session and familiarization with the training concept and the provided learning materials.

WP3: Development of country specific content for the training
WP4: Extension of the existing training guideline by development of methodology and didactic training approach to enhance active participation.
WP5: Execution of six 3-day trainings of 2 trainers incl. site visit in person in 6 different cities in India

For the allocation of man-days in accordance to the milestones please see the table in chapter 2.6

As the contract to be concluded is a contract for works, please offer a fixed lump sum price that covers all applicable costs (fees, travel expenses etc.). The price bid will be evaluated based on the specified lump sum price. For our internal costing and any further commissions, required, please provide per day fee of experts.

6. Requirements of the format of the bid

The structure of the bid must correspond to the structure of the ToRs. In particular, the detailed structure of the concept (Chapter 3) is to be organised in accordance with the positively weighted criteria in the assessment grid (not with zero). It must be legible (font size 11 or larger) and clearly formulated. The bid is drawn up in English.

The Technical bid shall not exceed 15 pages (excluding CVs)

The CVs of the personnel proposed in accordance with Chapter 4 of the ToRs. The CVs shall not exceed 3 pages. The CVs must clearly show the position and job the proposed person held in the reference project and for how long. The CVs should be submitted in English (language) only.

If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment