Agora Energiewende

Agora Industry

Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

Navigating the Landscape: **Business Opportunity Analyser for Identifying Promising PTX Value Chains**

Webinar, 21 June 2023

This project is funded by

International PtX Hub

Supported by:

Federal Ministry for Economic Affairs and Climate Action

on the basis of a decision by the German Bundestag

IKI INTERNATIONAL CLIMATE INITIATIVE

Implemented by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Agenda

Agora Energiewende
PTX BOA – a general introduction

Oeko-Institut
Part 1: Presentation of the tool
What‘s in, what‘s out?

Oeko-Institut
Part 2: Presentation of the tool
A guided walk through the PtX BOA

Plenum & chat
Q & A session

Oeko-Institut e.V.

Who are we?

- **Independent research organisation**
- More than 200 people based in Freiburg, Berlin and Darmstadt in Germany, **focussed on sustainable transition**
- Our scientists work to craft an energy system that does without nuclear power, relying instead on **efficient use of energy & on the use of low-carbon and renewable sources**
- Project teams integrate the expertise of **engineers, natural scientists, economists and social scientists**
- **Clients include national, regional and local authorities, companies and corporations, international institutions** such as the European Commission, the European Parliament and development banks, as well as environmental NGOs

Oeko-Institut

Part I – Presentation of the tool

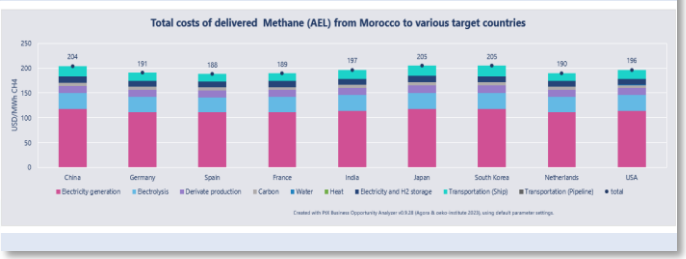
What‘s in, what‘s out?

The PTX BOA helps you to…

… get an impression of total costs of delivered hydrogen and various derivative molecules from your country of interest to a potential demand country

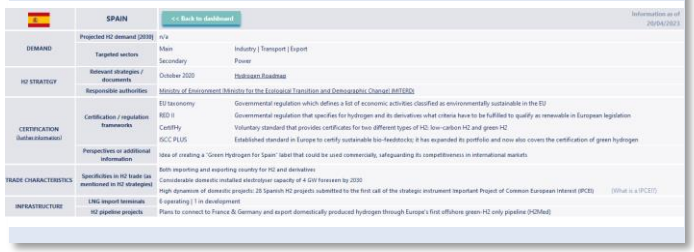
… analyse the cost components of selectable process chains and production routes

… compare costs between various production pathways, supply and demand countries on a global scale



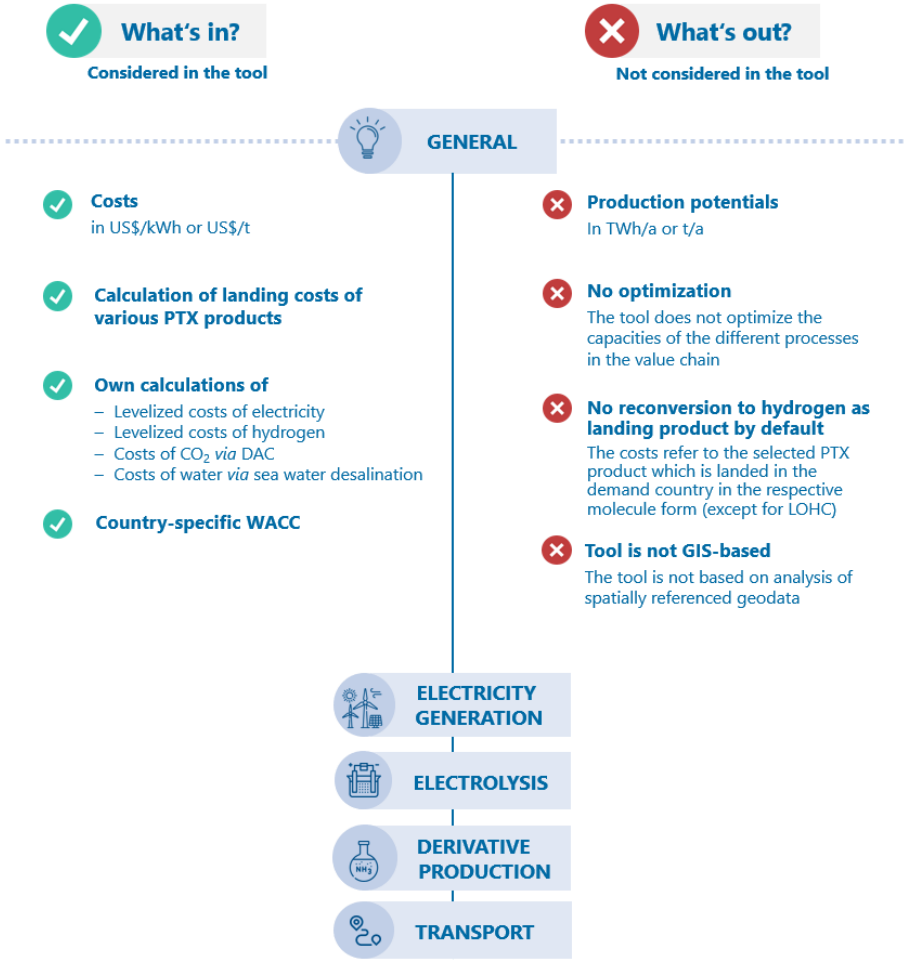
… adjust data points based on your own experience

… access comprehensive additional context information, e.g. on sustainability issues and certification



PtX BOA – What‘s in, what‘s out?

PtX BOA – What‘s in, what‘s out?



PtX BOA – What‘s in, what‘s out?

ELECTRICITY GENERATION

- **Country-specific CAPEX**
  CAPEX are country-specific for *PV* and *Onshore Wind* based on real projected costs
- **Reduction of CAPEX over time for RES-E**
  based on global learning curves
- **Country specific OPEX**
  OPEX are country-specific for all RES-E technologies in the tool
- **Uniform lifetime data for RES-E, electrolysers and derivative technologies for all countries**
- **Country & technology-specific full load hours (FLH)**

- **Costs of electricity transmission not included** in cost calculations

PtX BOA – What‘s in, what‘s out?

ELECTROLYSIS

Own calculations of levelized costs of water input for electrolysis

Costs for water input are calculated in the tool based on water desalination data

CAPEX includes reinvestments into the stack

FLH of electrolysis reflect FLH of RES-E generation

Higher RES-E FLH lead to higher FLH of electrolysis; data based on literature

Specific efficiencies for different electrolysis technologies

Including learning curves over time from literature

No own calculations of costs for possible battery storage option

Option is included as a top up on final costs, but not calculated in the tool itself

PtX BOA – What‘s in, what‘s out?

DERIVATIVE PRODUCTION

Own calculations of levelized costs for CO_2 inputs
Costs for CO_2 inputs (if needed) can be calculated in the tool based on DAC

Costs for heat
Costs for heat (if needed) are specified, based on data from the literature

FLH of derivative production reflect FLH of electrolysis
Higher electrolysis FLH lead to higher FLH of derivative production; data based on literature

Specific efficiencies for different derivative production technologies
Including learning curves over time from literature

No own calculations of costs for possible demand for hydrogen storage or heat storage
Possible demand is included as a top up on final costs, but not calculated or optimized in the tool itself

PtX BOA – What‘s in, what‘s out?

TRANSPORT

Costs for transport activites outside the supply country
Transport activities *via* ship or pipeline

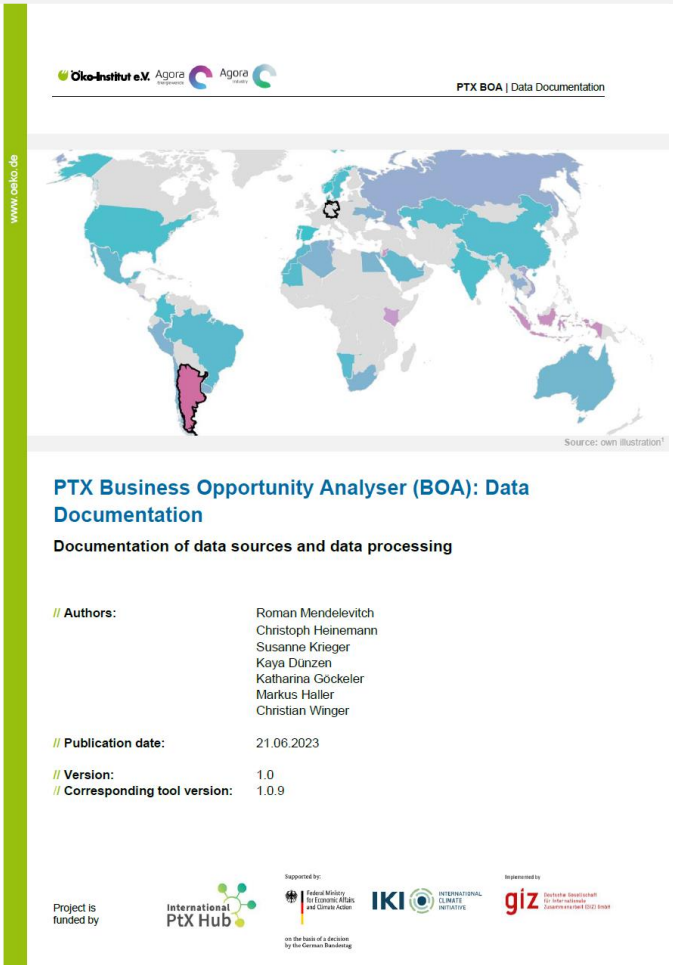
Pipeline transport available for transport distances < 6000km
Only for transport of hydrogen (H_2) and methane (CH_4)

Different cost assumptions for pipeline options
- New / repurposed pipelines (repurpose option by default only if there is already an existing pipeline connection)
- Land / sea pipelines

Costs for transport activites with the supply country
- e.g. transport of RES-E from production site to electrolysis
- e.g. transport from electrolysis to port / LNG terminal / pipeline starting point

Costs to build auxiliarly infrastructure (e.g. ports)

Further information on the PTX BOA



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PTX BOA | Data Documentation

Source: own illustration[1]

PTX Business Opportunity Analyser (BOA): Data Documentation

Documentation of data sources and data processing

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// **Publication date:** 21.06.2023

// **Version:** 1.0
// **Corresponding tool version:** 1.0.9

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Supported by: Federal Ministry for Economic Affairs and Climate Action on the basis of a decision by the German Bundestag; IKI International Climate Initiative

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- **Detailed documentation of calculations, sources and methods** underlying the data used in the PTX BOA
- **Will be availabe** as supplementary information to the tool on the PTX BOA website

Oeko-Institut

Part II – Presentation of the tool

A guided walk through the PtX BOA

Plenum & Chat

Q & A session

*Feel free to post your questions in the **Q & A box** – we are happy to answer them!*

Free download: https://www.agora-energiewende.de/en/publications/business-opportunity-analyser-boa

Cite as: *Oeko-Institut, Agora Energiewende & Agora Industry (2023): PTX Business Opportunity Analyser, Version 1.0.9*