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“Kenya’s Path to a Power-to-X Economy: A Skills Development Perspective”

Skills Needs and Gaps Analysis in Kenya’s PtX Sector and Recommendations for a Human Capacity Development Programme

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

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Outline

- Introduction
- Methods used
- Findings
- Recommendations

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1 Introduction

Why was it necessary?

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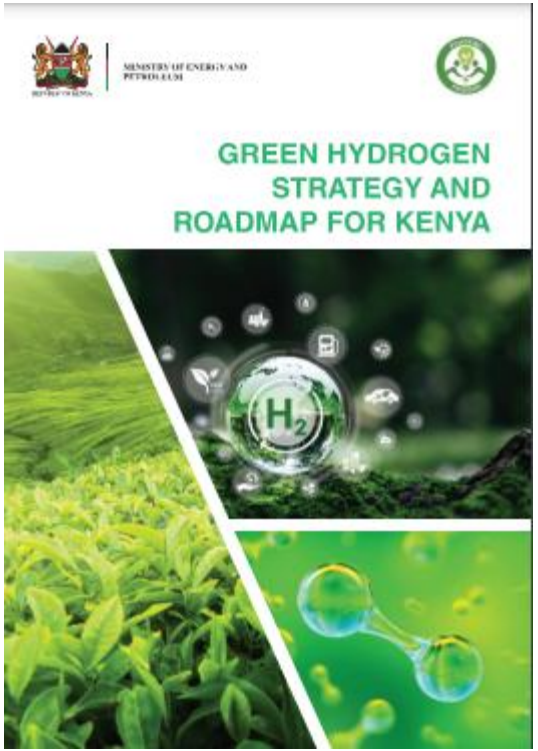
Capacitating the Workforce for Kenya‘s Green Hydrogen and Strategy and Roadmap



“The establishment of a comprehensive capacity development programme is crucial for Kenya to leverage the transformative potential of green hydrogen and PtX technologies, aligning with national objectives for sustainable socio-economic development.”

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Objectives and Scope of the Study – What?

Objectives

- **explore the types of jobs (occupations) and skills requirements** in the GH2/PtX industry in Kenya
- **identify related skills gaps** in the education sector in Kenya, as well as barriers and enablers
- **propose measures** for setting up a national **human capacity development** strategy for GH2 and PtX

Within Scope

- qualitative analysis of jobs: identify the **specific skills required by direct jobs of the PtX industry** including technical and managerial capabilities
- **identify the related education gaps and barriers** that currently impede Kenyans from accessing employment opportunities within the PtX industry
- **create recommendations to bridge the identified skills gaps**

Outside Scope

- **quantitative analysis** of job demands
- jobs and skills **in parallel industries/sectors**
- **analysis of indirect and induced jobs**

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2 How:

Methods used

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Methodology of the Study – How?

Stakeholder Analysis

- Key stakeholder identification in Kenya: GH2/PtX Industry, Higher Education and TVET, Public Sector
- Relationship mapping

Skills Needs Assesments
PtX industry

- Review and analysis of international literature on jobs and skills in the GH2/PtX industries, as well as on relevant national policy docs
- Focused group discussions, interviews and online surveys with Kenya's key stakeholders

Educational Gaps Analysis

- Analysis of the existing educational ecosystem in Kenya, in relation to the identified skills needs for the GH2/PtX industry: Higher education and TVET systems

Recommendations

- Recommendations for a human capacity development programme for GH2/PtX in Kenya, short-, medium- and long-term

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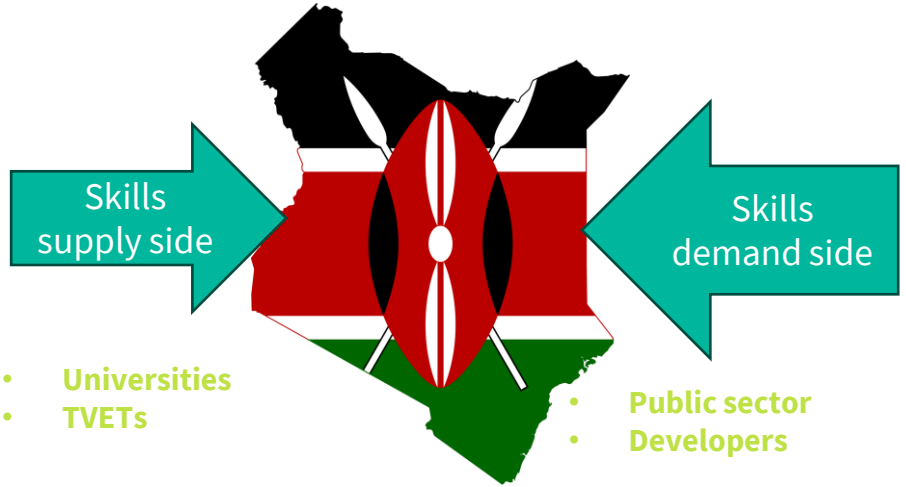
Results

General Skills Needs Assesment



- Universities
- TVETs

- Public sector
- Developers

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Results Presentation of the Study:

Skills Needs Assessment for GH2 and PtX vs Educational Gaps in Kenya

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Analysis of Kenya‘s Education Sector

TVETs

Universities

KNQA Framework

- Level 1: Primary Certificate)/Basic Skills/Skills for life
- Level 2: Secondary Certificate/ National Skills Certificate III (NSC-III)/Government Trade Test III (GTT-III)/National Vocational Certificate I (NVC-I)/Pre-Vocational
- Level 3: National Skills Certificate II (NSC-II)/Government Trade Test II (GTT- II)/National Vocational Certificate II (NVC- II)
- Level 4: Artisan Certificate/National Vocational Certificate III (NVC-II)/National Skills Certificate I (NSC-I)/Government Trade Test I (GTT-I)
- Level 5: National Craft certificate /National Vocational Certificate IV (NVTC IV)/Master Craft Person III
- Level 6: National Diploma/Master Craft Person II/Professional Diploma
- Level 7: Bachelor’s Degree/Management Professional/Master Craft Person I
- Level 8: Postgraduate Diploma/Professional Bachelors Degree/ Professional Master Craft Person
- Level 9: Master’s Degree
- Level 10: Doctorate Degree

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Analysis of TVET Education

Approved relevant TVET programmes by TVET CDACC as of 2022

No.	Programme	No. of KNQF accredited institutions				Approved enrolment
		Level 3	Level 4	Level 5	Level 6	
1	Air Conditioning and Refrigeration		3	7	3	110
2	Electrical installation	20	21	28	15	1701
3	Electronics	1	2	2	3	150
4	Electrical Engineering (power)			8	12	245
5	Instrumentation & Control		7	5	4	320
6	Electrical (operations)			5		50
7	Oil pipeline instrumentation and control			5		75
8	Masonry	20	10			700
9	Construction Management			1	2	20
10	Building Technician		4		14	310
11	Plumbing	20	10	2		710
12	Mechanical production	1	6	2	3	210
13	Mechanical heavy and light machinery operations	2				20
14	Welding	1	18	10	8	705
15	Solar PV installation	6	2	1		230
16	Carpentry and Joinery		5	3		120
17	Mechanical technology and maintenance				3	75

- **TVET education transitioning to CBET**
- **More students are joining TVETs**
- **Sector well positioned to support PtX**

Barriers/Challenges

- Recruitment of TVET trainers not fully harmonised
- Lack of coordinated industry linkage
- Challenges in graduates finding jobs
- Inadequate training equipment

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Analysis of PtX relevant University courses

Qualification area	No of courses	KNQF Level
Agriculture	48	7, 9, 10
Chemistry	112	7,9,10
Chemical Engineering	3	7,9
Civil Engineering	23	7,9,10
Electrical Engineering	32	7,8,9,10
Environment	159	7,8,9,10
Information Technology	105	7,8,9,10
Mechanical Engineering	35	7,9,10
Physics	67	7,9,10
Renewable Energy	13	7,9
Energy	13	7,9,10
Water Resources Management	25	7,8,9,10
Mechatronic Engineering	5	7,9,10
Instrumentation and Control	6	7,9
Geothermal Technology	2	8,9
Industrial Engineering	6	7,9,10

- The universities are offering all the basic skills needed for PtX sector
- Engineering courses need accreditation by EBK- 14 universities accredited
- 11 universities offering renewable energy courses
- **Challenges**
  - **Shortage of PtX-skilled lecturers**
  - Inadequate laboratory equipment
  - Governance of research
  - Insufficient Engineers in Kenya
  - Limited industry-academia collaboration

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Identifying Skills Gaps

Description of Occupational Groups

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Current PtX Activities in Kenya

One green ammonia plant operational

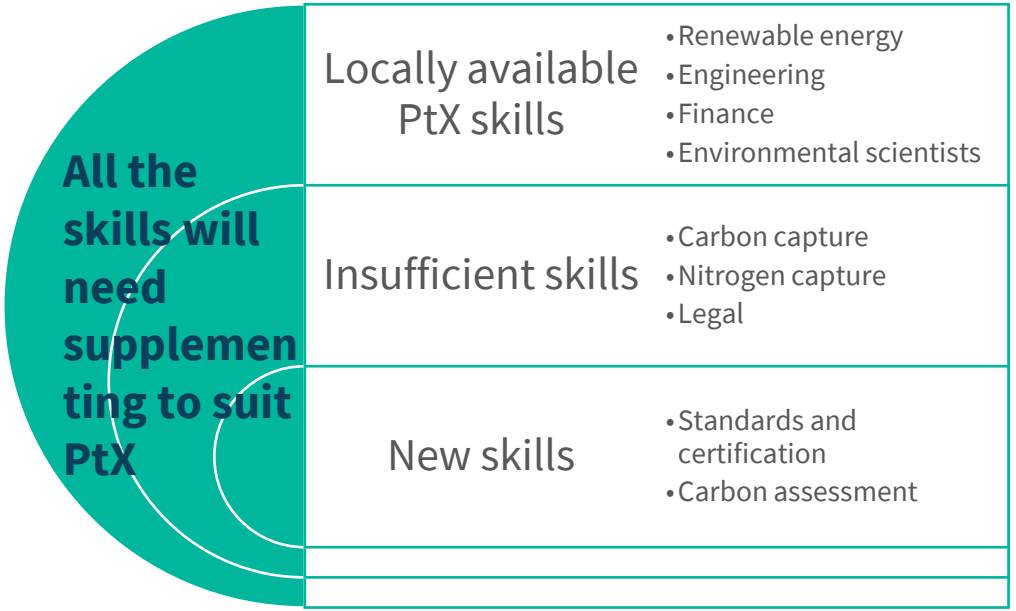
One entity at the detailed feasibility study

Resource identification (energy, land, finances)

Business case assessment and financial modelling

Identifying potential off-takers

State of Locally Available Skills for PtX



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4 Recommendations

for a Human Capacity Development Programme

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Key Recommendations

- Establishing a National PtX Skills Taskforce via existing WGs
- Develop Industry-Responsive Curricula and Training Programmes
- Up- and Re-Skilling
  - Existing Workforce
  - Academic and Vocational Training Staff
  - Training of Trainers in PtX
- Enhancing the Apprenticeship Programmes, On-the-Job-Training and Local Training Institutions
- Enhancing Research and Development Initiatives
- Establishing PtX Centres of Excellence
- Encouraging Engineering Professionals to Register with the EBK
- Promoting Gender-Inclusive Career Pathways
- Engaging Stakeholders
- Accessing Financing Opportunities
- Fostering Public-Private Partnerships (with Project Developers)
- Facilitating Entrepreneurship

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Proposed Short-Term Timeline

0-2 years

- Short courses for professionals & technicians
- Prioritise training policy professionals
- Collaboration to facilitate knowledge transfer

2-4 years

- Establish centre of Excellence
- Initiate incubation and mentorship programmes
- Tailor training programmes to meet evolving market
- Collaboration with international partners

over 4 years

- Integration into university curricula
- Shift skills development towards advanced roles in R&D and export-oriented activities

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