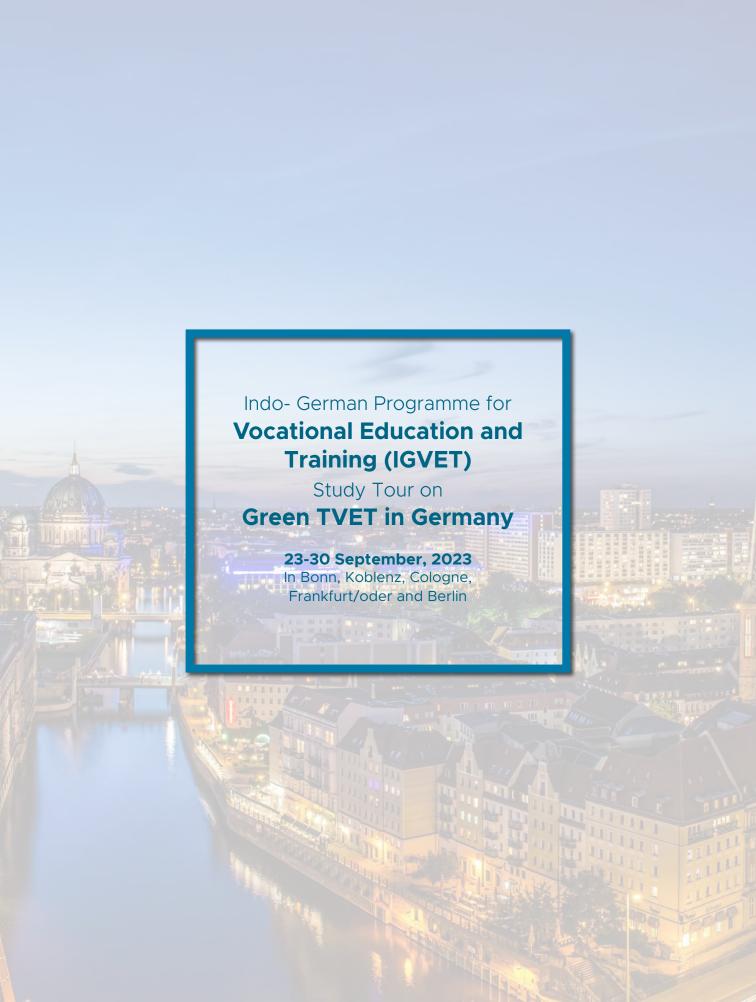


Indo- German Programme for VOCATIONAL EDUCATION AND TRAINING (IGVET)

Study Tour on

GREEN TVET IN GERMANY IN BONN, KOBLENZ, COLOGNE, FRANKFURT/ODER AND BERLIN







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OVERVIEW of the STUDY TOUR

Monday, 25.09.2023

- ▶ Welcome and Introduction to the German Dual TVET system
- Introduction to Federal Institute for Vocational Education and Training (BIBB)
- Hydrogen technologies

Tuesday, 26.09.2023

- ▶ Introduction to GIZ
- ▶ Visit to Science Shop Bonn (WILA), Bonn; Car House Scherhag and Chamber of Crafts Koblenz

Wednesday, 27.09.2023

Visit to Nicolaus-August-Otto-Berufskolleg (NAOB)

Thursday, 28.09.2023

- Visit to Lufthansa Aviation Training Berlin GmbH
- Introduction to Renewable Academy (RENAC) AG, Berlin

Friday, 29.09.2023

- ▶ Chamber of Crafts, Frankfurt/Oder
- Wrap-up and evaluation of the study tour

Introduction

The study on Green TVET in Germany was organized as part of the Indo-German Programme for Vocational Education and Training (IGVET) by GIZ. Ms. Khyati Naravane, Chief Executive Officer was nominated to participate in this study tour along with senior officials from Ministry of Skill Development and Entrepreneurship (MSDE), Skill Development Council, private organizations and GIZ leadership team from India.

This study tour was a testament to the fruitful partnership between the Ministry of Skill Development and Entrepreneurship (MSDE) and the Indo- German Programme for Vocational Education and Training (IGVET), under the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. This initiative aimed at exploring new horizons and synergies in German skills development and inclusive education.

The meetings and presentations delve into the core of Germany dual VET system, engagements and meaningful dialogues on green skill development and inclusivity.

Around the globe tackling the climate change and sustainable development has been at the core of discussions. Germany and India along with other nations are committed to sustainable development, economic growth and environmental responsibility. In Germany, the success of dual VET has provided high tech skilling to meet the evolving needs of the industry. India with its burgeoning workforce and ambitious climate goals would need mainstreaming green skills for green jobs to fulfil its commitments.

The study tour programme provided participants with an insider view of German TVET, the role of the Federal Ministry Germany and State's role, BIBB, industry and chambers of commerce with a centralised approach towards its success.

The participants also had an opportunity to visit the chamber of crafts, renewable academy and GIZ Office which gave them an overview of the German approach towards vocational training, apprenticeship, Ministries and Industry role as well as the technological development in the Auto and Energy sector.

During the study tour, participants got an opportunity to learn and understand the various aspects of the TVET and how the Indo - German collaboration can enhance the Indian capacity for sustainable growth.

Objectives

- Become familiar with the functioning, benefits, and legal requirements of the German dual VET system
- Get information about the status of green skills development programmes in Germany, including qualification and training for emerging jobs in renewable energy and e-mobility
- Exchange ideas with small, medium, and large enterprises on the topic of training, digitisation, and the use of new technologies in the selected green sectors,
- Exchange views with selected TVET institutions on the topics of student- centred pedagogy, didactic approaches and learning culture
- Explore synergy for the next plan of the TVET India on green skills.



LIST of the **PARTICIPANTS**

Sn.	Name	Institution/ Company	Function
1.	Dr. Rodney Reviere	GIZ	Project Head, IGVET II
2.	Ms. Sakshi Chawla	GIZ	Senior Advisor, IGVET II
3.	Mr. Navonil Das	GIZ	Technical Advisor IGVET II
4.	Mr. Ramesh Shivanna	Karnataka Renewable Energy and Solar Manufacturing Association	Past President
5.	Ms. Khyati Naravane	The Federation of Telangana Chambers of Commerce and Industry	CEO
6.	Ms. Meenu sarawgi	Automotive skills development council	EVP & Chief – Strategy & Operations
7.	Mr. Arpit Sharma	Skill Council for Green Jobs	Chief Operating Officer
8.	Mr. Sushil Warang	Tata Motors limited	DGM – HR – Skill Development
9.	Mr. Vishal Sharma	Hydrocarbon Sector Skill Council	Manager - Affiliation & Training Delivery
10.	Mr. Sanjay Kulkarni	Ecosun Energy Company	CEO
11.	Mr Raman Fakir Patil	Directorate of Vocational Education and Training, Govt of Maharashtra	Deputy Director
12.	Mr Mohammad Hamid Khan	Department of Employment and Training, Govt of Telangana	Assistant Director (Training)
13.	Mr. Harsh Vardhan Sharma	Ministry of Skill Development and Entrepreneurship(MSDE)	Assistant Director
14.	Mr. Hemant Ganjare	Directorate General of Training (DGT), Ministry of Skill Development and Entrepreneurship (MSDE)	Joint Director
15.	Mr. Nirmalya Nath	National Instructional Media Institute (NIMI), Directorate General of Training, MSDE	Deputy Director
16.	Mr. Arun Gupta	Regional Directorate of Skill Development and Entrepreneurship, Bhubaneswar	Assistant Director
Six	GIZ Members		
1.	Dr. Rodney Reviere	GIZ India	Project Head, IGVET II
2.	Ms. Sakshi Chawla	GIZ India	Senior Advisor, IGVET II
3.	Mr. Navonil Das	GIZ India	Technical Advisor, IGVET II
4.	Dr. Klaus-Dieter Mertineit	Independent Expert	TVET Expert
5.	Ms. Karin Tavernier	SOKRATES, Mannheim	Study Tour guidance

Sn. Name	Institution/ Company	Function		
Lecturers				
1. Ehlert, Wolfgang	Nicolaus-AugustOtto- Berufskolleg (NAOB)	School Director		
2. Kaczkowski, Sven	Chamber of Crafts, Frankfurt I Oder	Managing Director		
3. Dr Mertineit, Klaus-Dieter	Independent Hannover	TVET and Sustainability Expert Moderator		
4. Ostenrath, Krischan	Wissenschafts laden Bonn	Director		
5. Scherhag, Marc	Car House Scherhag, Koblenz	Owner, Manager		
6. Schmitt, Cara	BIBB Bonn	BILT-Project-Officer		
7. Schroers, Thomas	Lufthansa Aviation Training Berlin GmbH	Manager of Vocational Training and Further Training		
8. Breid, Berthold	RENAC Berlin	Representative for Public Relations		
9. Sinthern, Monika	BIBB Bonn	Communication and Public Relations		
10. Syha, Joachim	Central Association of German Motor Vehicle Trade	Expert for apprenticeship in the sector of car mechatronics and renewable energies		
11. Zinke, Dr Gert	BIBB Bonn	Work Department 2.4, Electrical-, IT Occupations based on Natural Sciences and Technology		

Agenda

Day 1 - Monday 25.09.2023

Session 1

- Welcome of delegates and Introduction to the Study tour by Dr Rodney Reviere
- Introduction to the German Dual TVET system with link to the planned field visits I meetings by Dr Klaus-Dieter Mertineit
- Approaches and activities to promote green skills development within the dual VET system by Dr Klaus-Dieter Mertineit

Session 2

- The Federal Institute for vocational Education and Training (BIBB): Structure and Framework 'of TVET in Germany by the BIBB I Discussion round by Ms. Monika Sinthern
- → The BILT-initiative of the BIBB by Ms. Schmitt

Session 3

- ✓ Future qualification requirements in German apprenticeship occupations due to hydrogen technologies (findings of a BIBB project) by Mr. Dr Gert Zinke
- Sightseeing walk in Bonn by Ms. Karin Tavernier

Day 2- Tuesday 26.09.2023

Session 1

✓ Visit to Science Shop Bonn (WILA), Bonn by Mr. Krischan Ostenrath

Session 2

✓ Introduction to GIZ by Ms. Gabriele Kohlisch

Session 3

- ✓ Visit to the Car House Scherhag by Mr. Mark Scherhag
- Visit to the Chamber of Crafts Koblenz by Mr. Mark Scherhag
- The tasks of the Central Association of the German Motor Vehicle Trade, particularly in dual VET by Mr. Joachim Syha

Day 3- Wednesday, 27.09.2023

Session 1

✓ Visit to Nicolaus-August-Otto-Berufskolleg (NAOB) by Mr. Wolfgang Ehlert and colleagues

Day 4- Thursday, 28.09.2023

Session 1

→ Visit to Lufthansa Aviation Training Berlin GmbH by Mr. Thomas Schroers

Session 2

✓ Introduction to Renewable Academy (RENAC) AG, Berlin by Mr. Berthold Breid

Day 5- Friday, 29.09.2023

Session 1

✓ Inter-company Training Centre of the Chamber of Crafts, Frankfurt/Oder by Mr. Sven Kaczkowski

Session 2

 Wrap-up and evaluation of the study tour by Dr Klaus-Dieter Mertineit

DAY - 1: 25th September, 2023

Introduction and German Dual **TVET System**

The German Dual VET system is a dynamic approach of Germany where the system works on the dual model

- ▶ In a Company training
- Part time vocational school
- ▶ The apprentices are employed/on contract during the apprenticeship by the company.

It has been observed that almost 50 to 60 percent of school leavers choose vocational education and training. There are 325 state recognized training occupations (vocational training) based on national standards which builds on competencies, contracts and modernized curriculum to meet the growing demand of skilled workforce.

The apprentice receives a training allowance from the employer, i.e., they get paid for the apprenticeship. The entire structure is regulated by the uniform national standard, regulatory framework and as per the German NQR (National Qualification Framework).

In case, the small and medium enterprises are unable to provide the stipulated learning content they utilize the services of Intercompany vocational centres. These Intercompany vocational centres are sponsored by the relevant industry partner. The Federal Ministry of Education and Research supports the centres with investment subsidies for buildings and infrastructure. The BIBB is responsible for promoting inter-company training centres and supporting the planning, establishment, and development of these facilities.

The chambers are usually responsible for the Inter-company vocational training centres. The examinations are conducted and a chamber certificate for the craft trades are provided to the apprentices once they complete the dual training.

The stakeholders of the German Dual **Vocational Education System are:**

1. The federal Government

has legislative powers

- is responsible for the content structure of the company
- promotes vocational education and training research and innovation

2. The federal states

- solely responsible for the school system in Germany.
- prepare curriculum for the vocational school as per the training regulations and company based
- finance teaching staff
- exercise legal scrutiny of the chambers.

3. The social partners

- develop proposals for the creation of new training occupations
- updation and modernisation of existing occupations
- prepare training regulations and skeleton curricula within the respective sector
- wage agreements & training allowances.

4. The chambers

- mediator between companies and apprentices
- monitor company-based training,
- ascertain the suitability of companies and trainers.
- register training contracts,
- conduct examinations.
- and set up a Vocational Education and Training Committee.

5. The Federal Institute for Vocational **Education and Training (BIBB)**

- contributes to scientific research in VET
- prepares the VET data report Germany
- promotes VET programmes and their scientific evaluation
- contributes to international collaboration in
- promotes inter-company vocational training centres
- advises policy makers.



Key Learnings

- ▶ The German dual vocational system is one of the best Vocational training System which is implemented across Germany with 234 vocational courses that make the student employable in any state of Germany.
- Industry partner is a key stakeholder who not only works with trade union but also vocational centres and the government in creating valuable content for the curriculum
- ▶ The federal and state government has a major role in funding such projects
- ▶ A ninth/ tenth standard dropout is also eligible to undertake dual training which makes him/her employable with the appropriate skilling

II. BIBB

BIBB is a Federal Institute for Vocational Education and Training. It is mandated to develop research-based vocational education and training. The institute is governed by the board that provides a cross-section of experts and acts as a statutory advisory body of the federal. The research council submits recommendations with respect to its research programmes and BIBBs collaboration with institutes and other partners with high educational institutes.

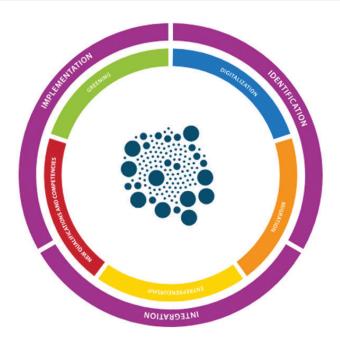
The BILT (Bridging Innovation and Learning) is an initiative of the BIBB. It started in 2019

with an aim to strengthen, foster innovation, enforce learning and capacity building within the TVET. The other objective is to upgrade and identify new qualification and competencies and understand the current trends and practices implemented across regions and countries.

As part of the study tour had an opportunity to visit to Car House Scherhag, Chamber of Crafts and German motor Vehicle. Nicolaus-August-Otto-Berufskolleg (NAOB), Lufthansa Aviation Training Berlin GmbH, Inter-company Training Centre of the Chamber of Crafts and others.

Tackling TVET challenges through peer learning on





UNESCO-UNEVOC

There are expert groups that meet and interact on the new qualifications and competencies for future-oriented TVET. As a pilot project they are working on Hospitality and tourism sector for the year 2024. Building and construction have been

identified as focused sectors.

Key learnings

It is important to understand the fundamentals of BIBB that purely enables the innovation and bridging the gap through collaboration and peer learnings.



- ▶ BIBB community is engaged in knowledge exchange and working on the various dialogues for successful projects implemented across the globe.
- Therefore, it is recommended to be part of the powerful community.
- ▶ BIBB has published serval newsletter and publications which are available in the public domain and needs to further research and explore to utilize for Indian Community.
- ▶ Participate in BIBB conference and seminars to understand the whole ecosystem better.

III. Hydrogen

Hydrogen can be used as Energy source and Energy storage to power industry, homes and transport. Preparing for the future and understanding needs of the hydrogen economy is challenging. Hydrogen holds significant promise in meeting the world's future energy demand. However, the economies of green hydrogen are challenging today. All reports

predict a steady growth in hydrogen demand until 2023, with applications in the transport, energy, and building sectors.

Countries like India have regions with both competitive and non-competitive products, which could drive their involvement in hydrogen trading. Countries are developing green hydrogen strategies and Germany is one since 2020. Hydrogen predicted to make up 12% of global energy use by 2050 (IRENA).

Key Learnings

- ▶ The global energy demand is ever increasing and hydrogen could be the solution for meeting those demands.
- Convergence of hydrogen to green hydrogen still remains the challenge.
- Technology such as carbo capture, utilization and storage are important.
- Development of regulatory framework to cater to the growing demand of hydrogen.





DAY - 2: 26th September, 2023

I. Science Shop (Science Shop (Wissenschaftsladen Wila), Bonn

Bonn Science Shop (WILA Bonn) was established in 1984 as a non-profit organization. It receives partial funding for its Education Centre, research, and projects.

The employment in the green economy will be 42 million whereas today it is only 3 million. Therefore, the organization serves as a research institute, updates databases. provides orientation, and imparts knowledge. The greening jobs will not only be applicable for workers but also the professionals at some point will need such awareness on climate protection where we applied science will add value.

It is a known fact that a sustainably operated company is very attractive. Therefore, it is important for citizens to understand the knowhow and basics of sustainability, which are currently underdeveloped, imbalanced, and conservative.

The organization takes on international and national projects focusing on climate change adaptation, soil education, bioeconomy, the employment market for green jobs, and education on renewables for sustainable development and biodiversity.

They have initiated a green working network, which comprise 120 members who are hydrogen player in their own domain and have been working on a mission to contribute towards sustainable green economy.

The projects of WILA are funded by the European Commission, federal and state ministries, municipalities, the employment agency, and foundations. Bonn Science Shop have been awarded for various projects. They conduct seminars and online courses on topics that provides skill and training, besides training of trainers.

They also provide job opportunities in the fields of education, communication, arts & culture, environmental conservation, science an& research and innovation. They operate through two verticals: the digital WILA job market and WII A education centre.



Key learnings:

- A very focused approach to understand their commitments in spreading awareness on climate protection, green economy and adopting sustainable practices
- The green working network is one of the best practices with 120 experts coming together on a single platform to create inputs. Similar network groups can be formed by institutions that can work on similar lines for creating meaningful impact.
- Informative seminars and conferences are available on their web portal which can referred for future.
- Dr. Rodney Reviere, Project Head, Indo-German Programme for Vocational Education and Training (IGVET) is an expert in this domain and it would be an honor to invite him in the near future to share some of the best practices.

II. Deutsche Gesellschaft für Internationale Zusammenarbeit

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH has been working jointly with India on sustainable, economic, ecological and social development. The areas of GIZ in India are energy, environment, climate change and biodiversity, sustainable urban and industrial development and sustainable economic development. The government of India have numerous important situations to address the economic, environment and social challenges

and GIZ is contributing to few important one like clean India, skill India and others.



Key Learnings

- Understanding the bilateral presence of GIZ, working in India on energy, education and climate change, urban and industrial development and sustainable economic development.
- ▶ GIZ's role in skill development in various states cooperative training opportunities under Indo- German Programme for Vocational Education and Training (IGVET) and GIZ fact sheet.

III. Car House Scherhag

The dual vocational training works in close coordination with company, external companies, vocational tools. There are 323 state run training courses. The automotive sector offers great opportunities for the apprenticeship programmes with a minimum qualification. A ninth or tenth standard dropout can also be trained under the dual VET system. Almost 1600 to 1800 students are trained every year, many of them move for bachelor degree after completion of this vocational training.

In the vocational school students are taught to analyze the problem area, technical and operational management and in the external companies they are taught to solve the problem and get hands on experience in the internal and external companies. There are various non-regulated programmes as well as regulatory which they can opt for.

The future of the auto Mechatronics looks very interesting in terms of modernization and educational vocational requirements that will increase the demand and required qualified personal in the automation of vehicles. The new system articulates the Artificial Intelligence, automated calculations and requirement to design and build a more technology driven car such as car plane air. The vocational training will always have a significant role to play in the industry.

IV. Visit to Chamber of Crafts Koblenz



The Koblenz Chamber of skilled crafts is the self-governing body of the skilled crafts in northern Rhineland- Palatinate and thus the partner of 21,300 businesses. The Chamber has a modern vocational training center where, among other things, skills in the filed of -mobility are taught and trained.

V. Visit to German Association of Motor Trades, Bonn

The central Association of the German Motor Tradse represents 36,420 car dealerships and garages, 434,000 employees and 90,200 trainees in technical and commercial professions. It is divided into 14s regional associations under the umbrella of the Central association of German Crafts.



DAY - $3:27^{th}$ September, 2023



Visit to Nicolaus-August-Otto-Berufskolleg (NAOB)

The NAOB is a vocational training institute within the German dual system. Every year 1700 students attended the courses. The vocational training offers training in automation, engineering, transport and vehicle engineering. NAOB students have taken part in several European projects with industrial partners as well as have exchanged student programmes with partners in France, Belgium, Hungary and Russia.

NAOB has stood as one of the best training institutes in vehicle technologies and transportation. The curriculum is modernized as per the technological advancements inn the transport sector.

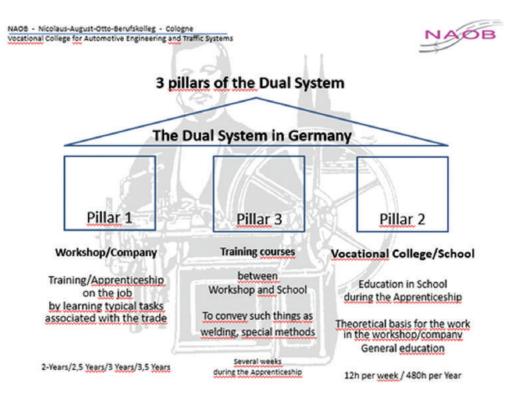
Key Learnings:

Not the object, but the occupational requirement, the "activity" and the acquisition of competences within the framework of the activity are in the foreground of the lessons



▶ The structure of the learning fields is therefore not based on the subject system, but on the vocational requirements and the

activities in the company, which are divided into fields of action.





DAY - 4: 28th September, 2023



I. Visit to Lufthansa Aviation Training Berlin GmbH

Lufthansa Aviation Training is a leading training partner of airlines crews in Europe. Lufthansa Aviation Training is deeply linked in the aviation sector through experience, heritage and training expertise which enables them to train the new skill as well as human factors and service training. LAT is been a holistic training center along with the aviation life cycle and work with 120 training partners.



Some of the key highlights:

- ▶ Six training centers
- ▶ More than 700 trainers
- ▶ About 50 full flight simulators
- Over 60 years of experience

EFA is a training institute established 60 years back for L & Swiss. EFA graduates has a prospective for the job in corporate Lufthansa group of Airlines and if they do not get a job 50% of training cost is reimbursed. The EFA focuses on top quality simulators. The advantage of EFA are the high-quality training, best job projects and sustainability.

Key Learnings:

- ▶ The future pilots are taught on sustainable flying right from the start.
- ▶ The structure of the learning fields is therefore not based on the subject system, but on the vocational requirements and the activities in the company, which are divided into fields of action
- Not the object, but the occupational requirement, the "activity" and the acquisition of competences within the framework of the activity are in the foreground of the lessons

II. Renewable Academy (RENAC) AG, Berlin

The rapid growth of renewable energy (RE) and energy efficiency (EE) markets worldwide, and the increasing necessity for greenhouse gas mitigation and climate protection, has led to an increased demand for the expertise and qualifications of individuals, industry and organisations. Public, private, finance and training sectors are all building up professional capacities to facilitate the market growth of green energy technologies and fully enhance their respective roles. RENAC's vision and mission is to support the market development of green energy technologies (RE and EE) worldwide through capacity building and trainings, consultancy in the training sector, expert exchange and networking. Since its founding in 2008, RENAC has trained more than 30,000 participants from over 160 countries with online trainings, face-to-face trainings and trainthe-trainer trainings.

PROJECTS WORLDWIDE

- ▶ Public sector officials for legal frameworks. regulation and implementation:
- Ministries
- Regulators
- Local administrations
- Private sector:
- Project developers
- System integrators
- Engineers and technicians

- Investors
- Financing institutions
- Grid operators
- Multipliers and development organisations:
- Development corporations
- Energy agencies
- International financing institutions
- NGOs
- Capacity building and dissemination sector:
- Public and private training institutions
- Vocational training institutions
- Universities

Some of the Tailor-made Training Course of RENAC are Photovoltaics, Concentrating Solar Power (CSP), Wind energy, Bioenergy, Hydropower, Geothermal energy, Hydrogen Power-to-X, Power system planning, Energy efficiency, RE/EE legal aspects, RE/EE financial/ economic aspects, RE/EE market development and Train-the-trainer. It has national and international institutions as Partners.

Key learnings:

- ▶ A very dynamic and forward-looking institution that talk about future employment and skill sets requirement that does a lot of research on skill requirements in the future.
- ▶ RENAC is closely working with Indian partners on joint programmes and courses
- Opportunity to partner in the near future on Bioenergy, Hydropower, Geothermal energy, Hydrogen



DAY - 5: 29th September, 2023

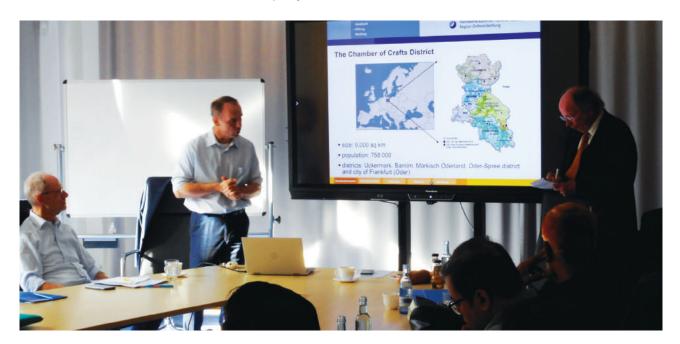
I. Inter-company Training Centre of the Chamber of Crafts, Frankfurt/Oder

The chamber was established in 1900 and it is a 123-year-old chamber. The Chamber of Crafts is a public law corporation and has approximately 12,000 member companies. There are 53 skill centers, 3700 apprentices, 45000 employees.

Key Learnings:

▶ How a chamber acts as an Inter-company and

- utilizes its services and facilities for vocational training
- ▶ The role of private sector in modernization of curriculum as well as its involvement.
- Role of federal state and state government and funding contribution that supports chamber to excel and expand.

















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