ALIANZA PARA LA FORMACIÓN DUAL DE AMÉRICA LATINA Y EL CARIBE

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bibb Instituto Federal de Formación Profesional

OIT Organización Internacional del Trabajo

60 años CINTERFOR

# "SOSTENIBILIDAD Y TRANSICIÓN VERDE EN LA EDUCACIÓN Y FORMACIÓN PROFESIONAL DUAL."

**31 de agosto de 2023**
**Plataforma Zoom**

# Decarbonization
# Digitization
# (Demography)
# TVET and sustainable supply chains

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(BIBB)

# Topics

I. Understanding and dimensions of sustainability

a. Thinking sustainability and vocational training together

b. General education - environmental education and permeability of the vocational training system

II. Ways to sustainable education and training

a. School as a place of learning - environmental education and permeability of the vocational training system

b. Learning site company - supply chains and sustainability management

III. Climate-relevant job profiles

IV. Structural mechanisms and governance

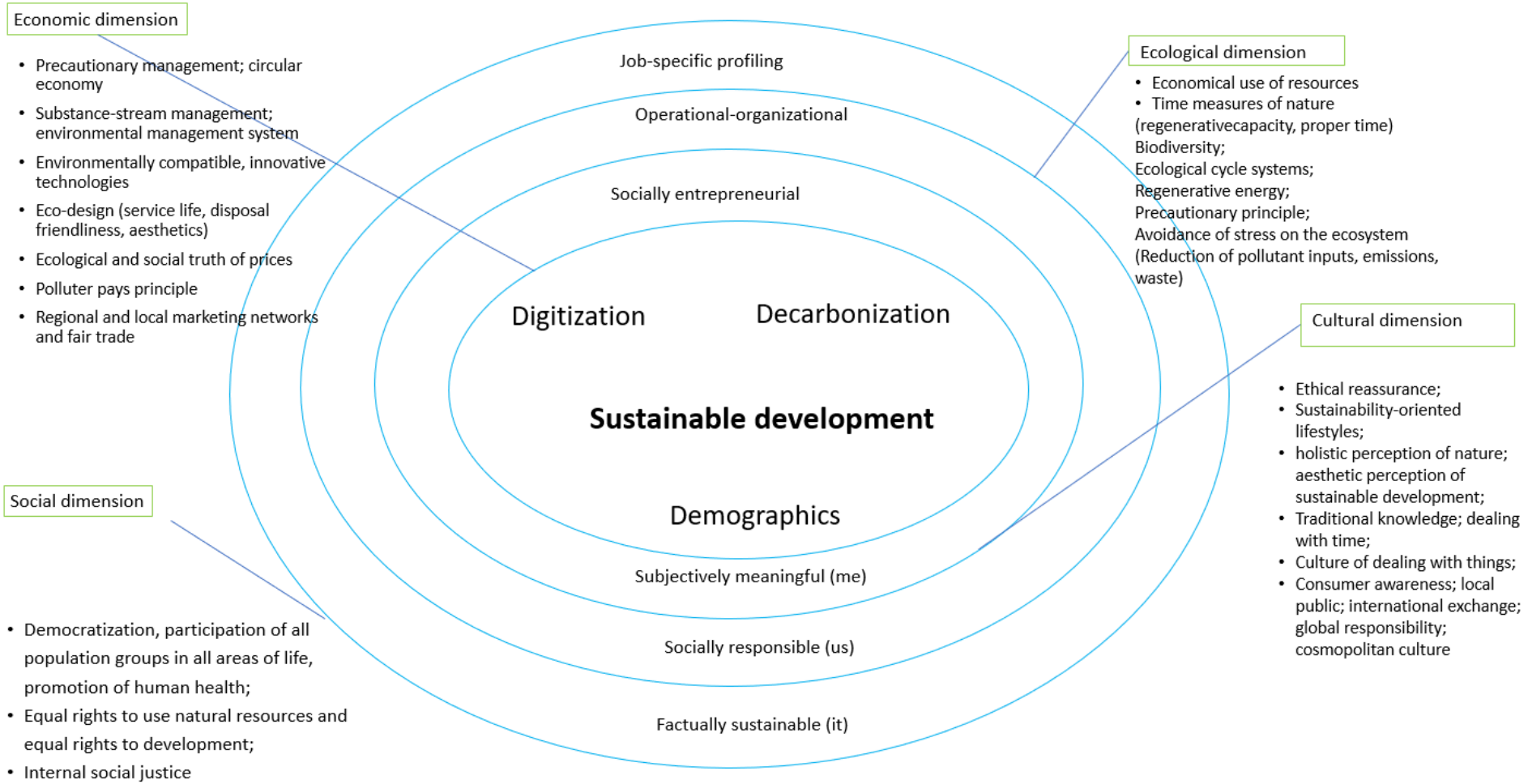
a. Standard job description positions

b. Research approaches – foresight

Summary

# I. Understanding and dimensions of sustainability

## a. Thinking sustainability and vocational training together




According to Stoltenberg 2010 and M. Bretschneider, 2022

# I. Understanding and dimensions of sustainability

## b. General education - environmental education and permeability of the vocational training system

Adult Education Centers

Continuing education for sustainable development

Citizen:inside education - Citizen Science

Universities, TU, technical colleges,
Distance learning universities,
Dual study Dual training

**Vocational Orientation**
**Quality of continuing education**

Scientists, Engineersetc.

Non-academic professionals in Environmental/water professions

Advancement qualification

Supra-company training

**Training personnel**

High Schools

Vocational High School

Integrated secondary school

G-School

High Schools
From grade 5 or 7

Integrated secondary education from class 7

Community school

Scientific and technical principles, environmental protection in economy and society, sustainable development

Ecological Interrelationships, environmental impacts, consumer behavior

**Vocational orientation/internships**
**Teachers - quantitative and qualitative**

Elementary Schools

First environmental education, environmental media, people, animals, plants

KITA - Playing and learning in nature („pre-school"/*Kindergarden*)

Crude oil and energy costs

Climate change

Mass production

# Future Bread

## Bakery entreprise

Crude oil and energy costs

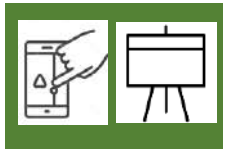
Climate change

Mass production

Cross cutting competence – sustainability and environment


Logistics

Distribution Management



Occupational profile positions/knowledge and skills

in work processes and with regard to
products, goods or services, materials
or services, materials and energy
under materials and energy under
economic, environmental and social
and social aspects of sustainability

Origin and production
- Transport routes
- service life and long-term usability
- Ecological and social footprint of products and services or of value creation processes.
- test seals and certificates, e.g..:
  - fair trade
  - regionality
  - ecological production

Possibilities for avoiding operational burdens
for the environment and society
in their own area of responsibility
recognize and contribute to their further development

- Resource intensity and social significance of business and work processes or value chains.
- Analysis of consumption data
- Perception and avoidance or reduction of burdens, e.g.:
  - Noise
  - Exhaust air, wastewater, waste
  - hazardous substances
- Rational use of energy and resources, e.g.:
  - Equipment running times
  - Maintenance
  - Service life of products
  - Handling of storage and print media
- Waste avoidance and separation.
  - Recycling, e.g.:
  - Recyclables
  - Recycling
  - Repair
  - Reuse
- Sensitivity to environmental pollution, also in adjacent work areas

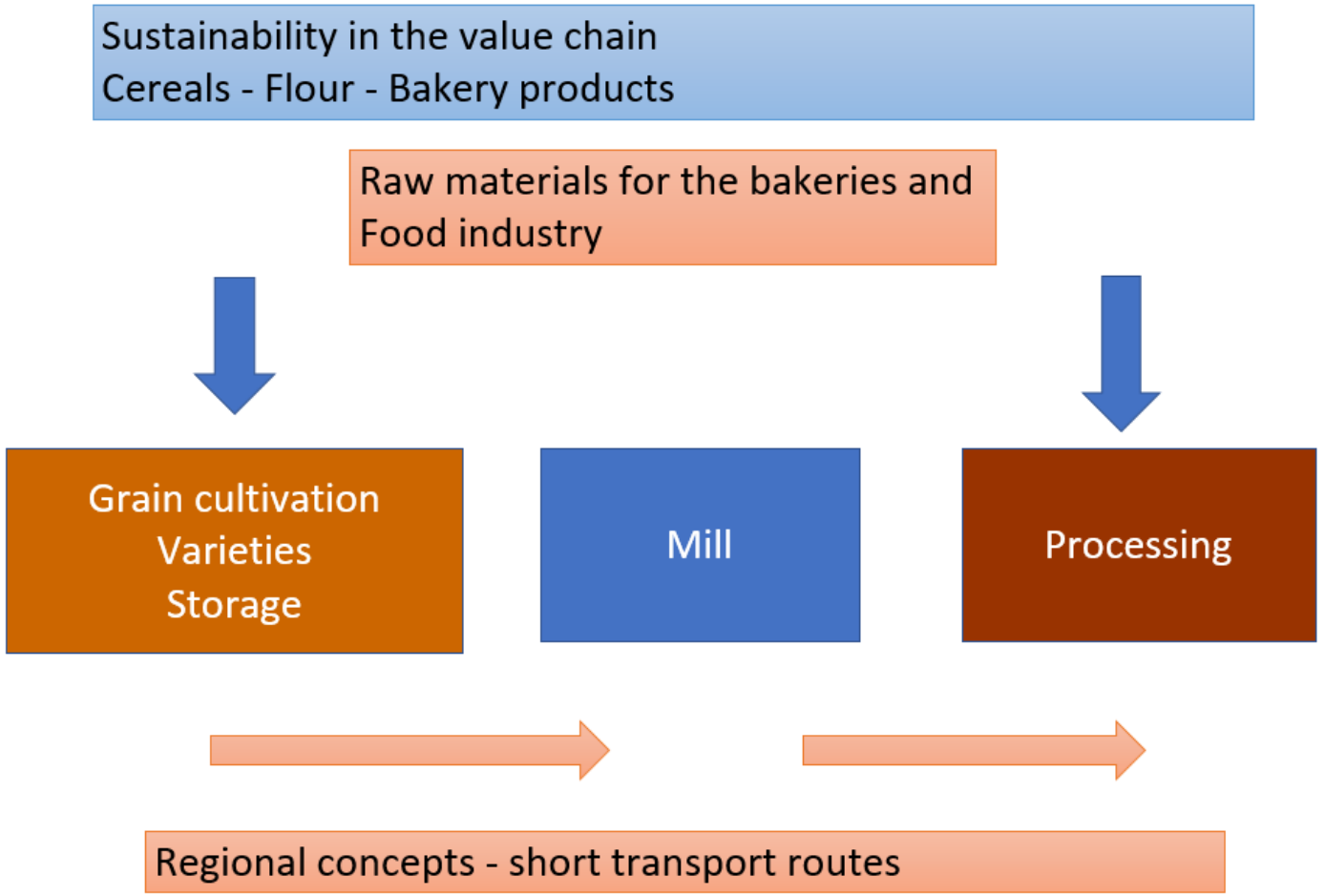
**Sales person eCommerce**

**Baker**

**Miller technologist**

## II. Ways to sustainable education and training

### a. School as a place of learning - environmental education and permeability of the vocational training system



# II. Ways to sustainable education and training

## a. School as a place of learning - environmental education and permeability of the vocational training system

| Action level | Field of action |
|---|---|
| Lesson/ Learning group | Teacher competencies, materials, textbooks, student competencies, instructional development. |
| School | School profiles, school life, school curricula, school management including budgets, parent participation, school development |
| School Board, Inspection | Quality assurance, (system) consulting, budget management |
| Ministries, subordinate Authorities | Legal framework in the sector, budget, curricula/curricula, quality framework, exams. |
| Universities, study seminars, State Institutes | Education and training |
| Colleges, universities | Research and teaching in educational science and didactics |
| Out-of-school education providers: NGOs, denominational institutions | Educational projects, partnerships, experts, extracurricular venues |

According to a project example HIBB, 2019

# Sustainability - International
# Brasil


## Cooperativa Agrária

## Pinhão - PR

Source: Christos G. Athanassiou

# II. Ways to sustainable education and training

## b. Learning site company - supply chains and sustainability management

**What can management do**

- Qualification of vocational training staff as promoters of sustainability in the learning venues of vocational training.

- Teaching by full-time and part-time training staff of relevant job-specific and cross-job sustainability skills and relevant sustainability aspects of company teaching/learning environments.

- Qualification of trainees as junior experts for sustainability in the company.

- Appreciation of the sustainability contributions of trainees and instructors and publicizing them within the company

- Internal evaluation of the systematic integration of sustainability in the training process and monitoring of the development into a sustainable place of learning.

**What can trainees actively do**

- Record videos and podcasts
- Create flyers and brochures
- Create sustainability team
- Support Human Rights
- Mentoring of other trainees
- Organize events
- 5-minute calls
  - Current developments in sustainability (Economics,
  - Politics and society
  - Discussion of own points of view (personal and professional)
  - Business games in which trainees take on the roles of decision-makers along real processes

# III. Climate-relevant job profiles

**Climate Careers**

- Plant mechanic, Electrician, Electronics technician
- Heating engineer, gas and water fitter
- Plant mechanic for sanitary, heating and air conditioning technology (SHK)
- Electronics technician for energy and building technology
- Electronics technician for building systems integration
- Roofer with focus on energy technology on roof and wall
- Painter
- Industrial clerks

**Environmental professions -**

- Specialists for water supply technology
- Specialists for wastewater technology
- Specialists for pipe, sewer and industrial service
- Specialists for recycling and waste management

**Green professions -**

Apprenticeships in the agricultural sector,
the "Green 14", environmental and climate protection in handling with soils, plants and animals and modern technology

**Electromobility (20 professions)**

- Electrical and IT industry and skilled trades and in the automotive trade
- Railwayman:in in the operational service (locomotive driver and transport)
- Professional driver
- Railroad and road transport clerks, transport service clerks
- Railroad worker: train traffic control, track builder

**Merchants**

- Wholesale and foreign trade management assistants
- Retail salespersons

**Environmentally friendly packaging**

- Paper technologist
- Packaging technologist

# IV. Structural mechanisms and governance

## a. Standard job description positions

### BIBB HA Recommendation No. 172

**Standard goes beyond the effective date in occupations from 01.08.2021:**

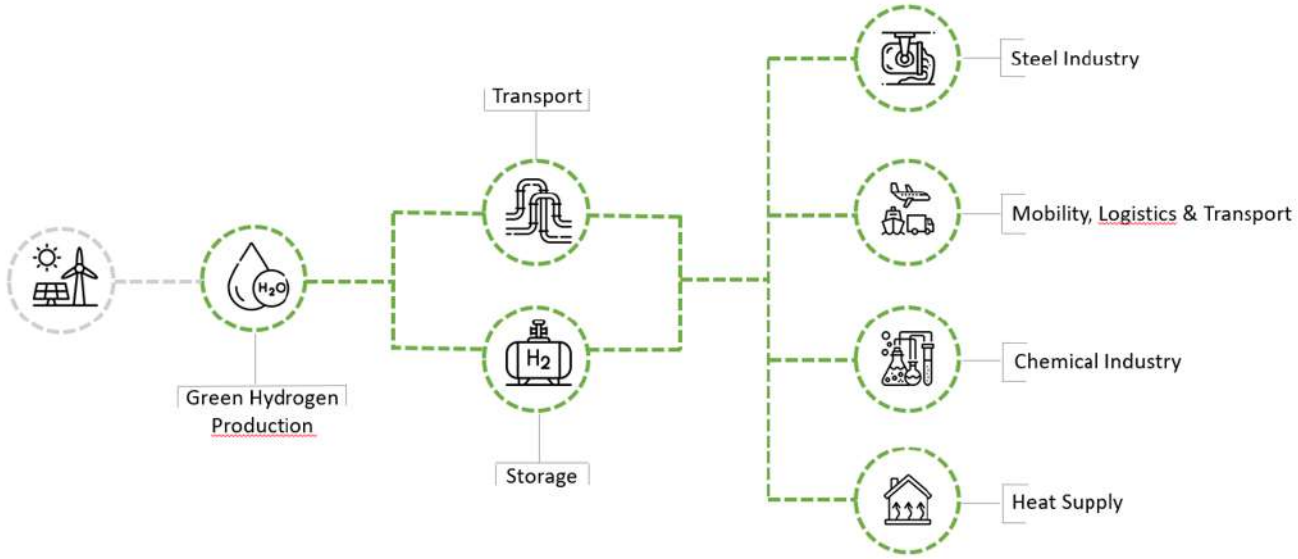

"In addition, the BIBB Board recommends that training companies and vocational schools should already **teach** these **modernized standard occupational profile items as an** integral part of the training **for all training occupations under the BBiG and HwO in** conjunction with subject-specific skills, knowledge and abilities throughout the entire training program, even if they are not yet included in all training regulations.
It appeals to all players in vocational education and training to **actively support** this by drawing the attention of training companies and vocational schools to this recommendation of the main committee and the importance of the new standard vocational training positions for the world of work of the future in various ways, by promoting their implementation and by providing them with suitable support in doing so."

Source: https://www.bibb.de/dokumente/pdf/HA172.pdf

# IV. Structural mechanisms and governance

## b. Research approaches – foresight

Assess changing **skills requirements** and **qualification gaps** in skilled occupations along the hydrogen value chain




H2Pro – Qualification Study

Dr. Gert Zinke; Thomas Felkl

# IV. Structural mechanisms and governance

## b. Research approaches – foresight

### Supply Chain in H2

| | | | | | | |
|---|---|---|---|---|---|---|
| Wind/ Offshore | Battery Storage | Electrolysis | H2 | Liquid Gas Storage | Preparation | Industry |
| Solar plus concentrated solar power | Thermal Storage | Steam Reformation | Ammonia | Compressed gas Storage | Pipelines Shipping/ Truck | Electricity |
| Bioenergy | Cold Storage | Methane | Oxygen Methane | Chemical Bond | | Electromobility |
| Geothermal Energy | Other | Other | Other | Other | Other | Heating/Cooling |
| Other | | | | | | Other |
| Energy Source | Energy Storage | Conversion | Synthesis | H2-Storage | Transport | Customers |

# IV. Structural mechanisms and governance

## b. Research approaches – foresight

Assess changing **skills requirements** and **qualification gaps** in skilled occupations along the hydrogen value chain

Short-term
First qualification curriculum (72 hours) developed by provider and timely reaction to qualification needs of an evolving market; Basic knowledge of the subject

Midterm-/Long-term
Integration in higher vocational training (Master VET)
Qualification along the hole supply chain with alternative energy source

Module 1 – economic/ecologic basic knowledge
Module 2 – properties of H2
Module 3 – Production of H2
Module 4 – H2 Technology
Module 5 – Storage and Transport
Module 6 – Environmental protection and labour security
Module 7 – legislation and regulation

## Summary

## Facing the challenges - decarbonization, digitalization and demography

I. **The dimensions of sustainability are - ecological, economic, social and cultural**

- Objectively meaningful (me)
- Socially responsible (we)
- Factually sustainable (it)

II. **General education - environmental education and permeability of the vocational training system**

- Penetration of the entire formal education sector contributes to sustained awareness

III. **Pathways to sustainable education and training**

School as a place of learning - bottom-up approach - teaching/learning group - School Supervision/inspection Ministries, subordinate authorities, universities, study seminars, state institutes, colleges, universities

Learning location company - intrinsic motivation of the management together with training

- Qualification of vocational training personnel, teaching by full-time and part-time training personnel of relevant occupation- specific and cross-occupation sustainability competencies and relevant sustainability aspects of company teaching/learning environments
- Qualification of trainees as junior experts for sustainability in the company

## Summary

**Facing the challenges - decarbonization, digitalization and demography**

IV. **Climate-relevant job profiles**

- Analysis on the impact of active climate policy to be considered in all professional profiles

V. **Structural mechanisms and control**

- Standard occupational positions - agreement on a minimum framework.
- Research approaches - foresight on the megatrends of digitalization, decarbonization and demography

# Thank you

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# GRACIAS

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