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SWISS FEDERAL INSTITUTE
FOR VOCATIONAL EDUCATION
AND TRAINING

GREEN SKILLS IN SWISS VET PROGRAMMES

Erik Swars
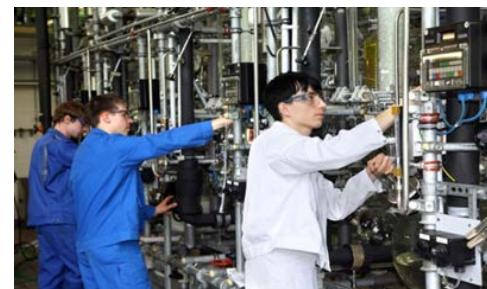Swiss Federal Institute for Vocational Education and Training
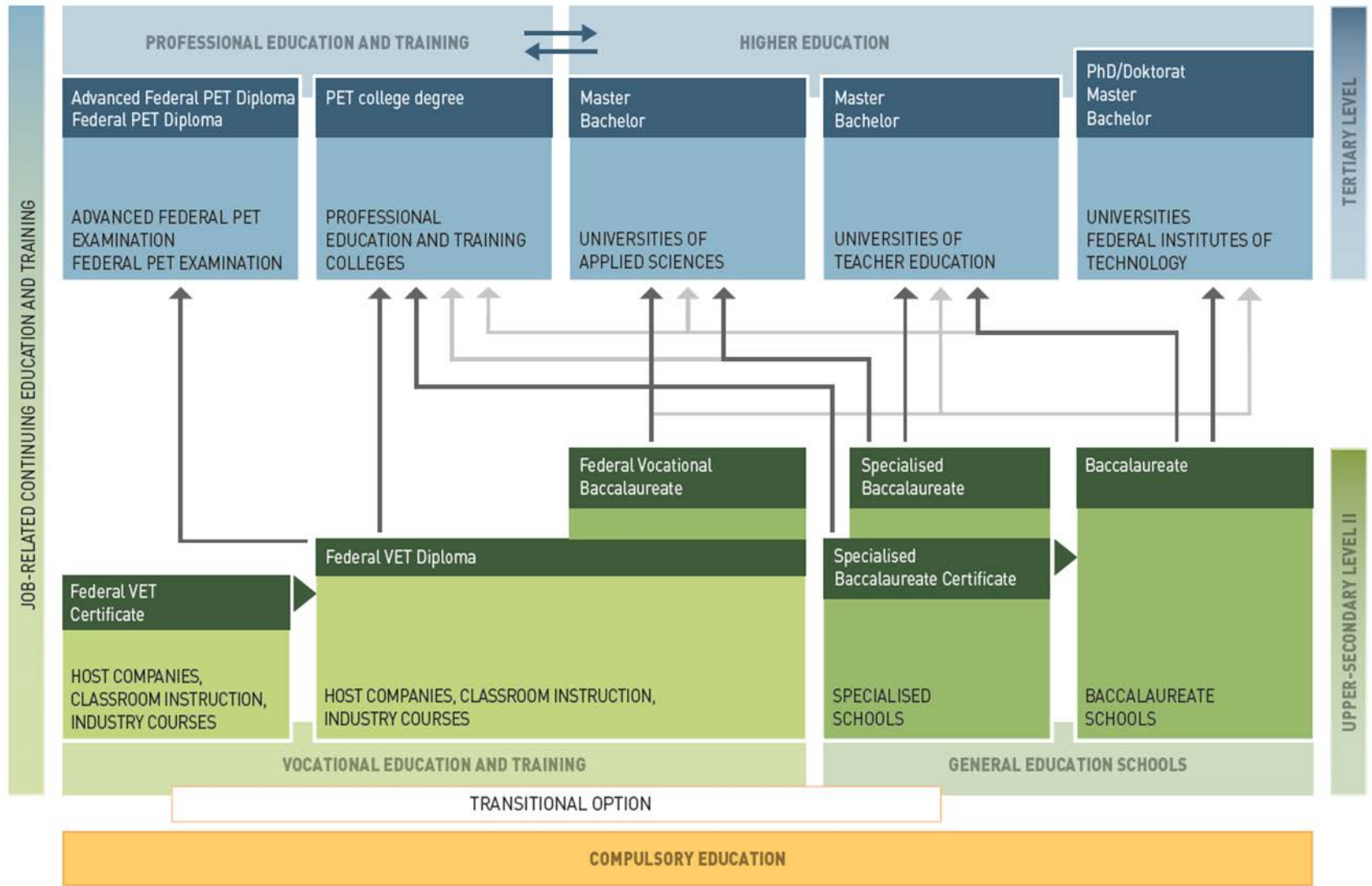
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Overview

1. Swiss VET-System and SFIVET
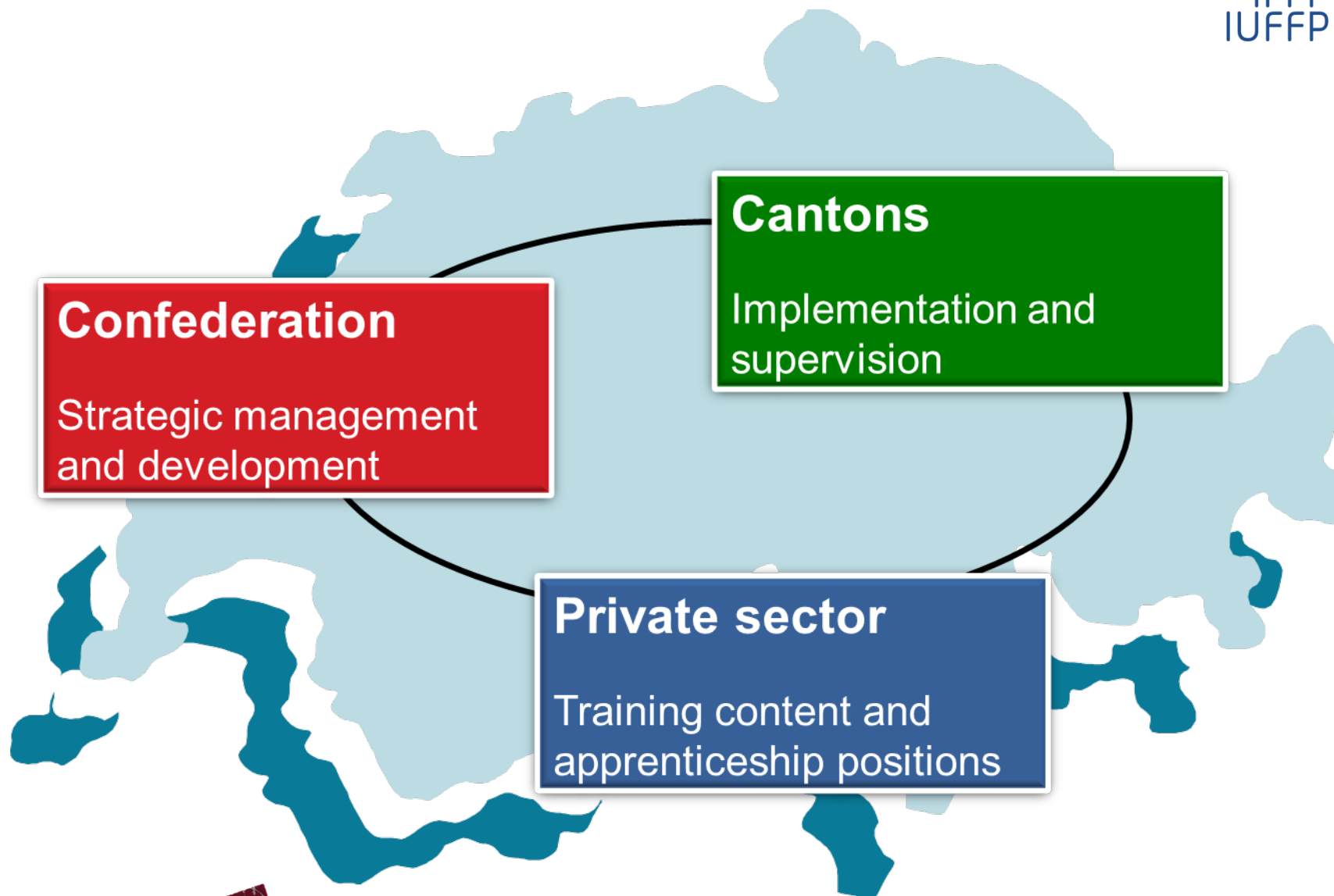
2. Study: « Green Skills in VET programmes »
    - Why this study ?
    - Scope of the study
    - Findings
    - Example

Education System Switzerland

VPET: 1 mission – 3 partners

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Cantons

Implementation and supervision

Confederation

Strategic management and development

Private sector

Training content and apprenticeship positions

Presented at Global Forum on
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SFIVET: The Confederation's Expert Organization for VET

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Swiss Federal Institute for Vocational Education and Training (SFIVET) is part of the Federal Department of Economic Affairs, Education and Research.
It is the Swiss governmental center of competence in VET for the provision of expertise in these three core areas:

- Training of VET actors

- R&D

- VET development

Overview

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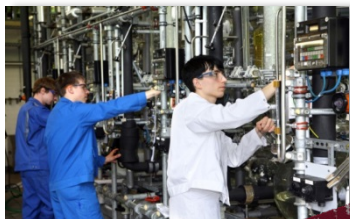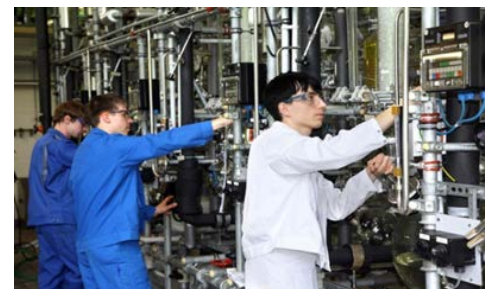   - Scope of the study
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Why this study?

CLEANTECH MASTER PLAN

A FEDERAL GOVERNMENT'S STRATEGY TO IMPROVE RESOURCE EFFICIENCY AND PROMOTE RENEWABLE ENERGIES

The Swiss Parliament asked the Federal Council to determine the extent to which Swiss VET programmes further the objectives established in the Cleantech Master Plan

Review of all vocational education and training (VET) courses in terms of resource efficiency and renewable energies and provide support to VET partners

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The study

"Cleantech" in the curricula of VET programmes

- **A SFIVET-led study in cooperation with two partner institutions: WWF Bildungszentrum and the engineering company Planair SA**

- **Findings published in 2013 and fact sheets beginning of 2014**

- **Link to download findings:**
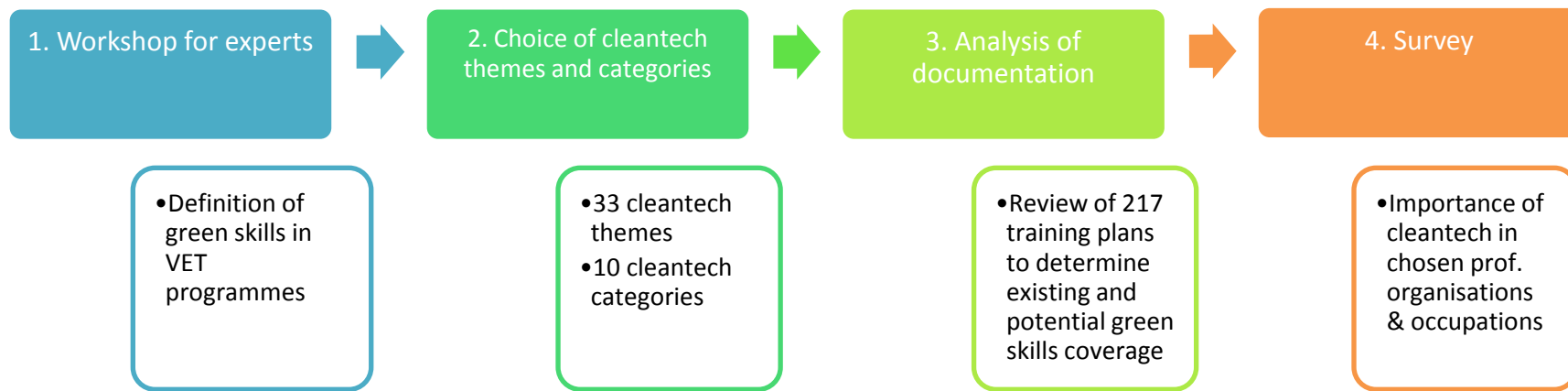 **www.sbfi.admin.ch/cleantech-d**

Study Questions

- **How can the term "green skills" ("cleantech-competences") be defined specifically for VET programmes?**

- **What cleantech themes have already been included in the training plans of Swiss VET programmes?**

- **Where do gaps remain?**

- **How do host companies, as a key "learning location" in VET programmes, perceive the importance of cleantech and the acquisition of green skills?**

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Approach and Methods

1. Workshop for experts	→	2. Choice of cleantech themes and categories	→	3. Analysis of documentation	→	4. Survey

- Definition of green skills in VET programmes

- 33 cleantech themes
- 10 cleantech categories

- Review of 217 training plans to determine existing and potential green skills coverage

- Importance of cleantech in chosen prof. organisations & occupations
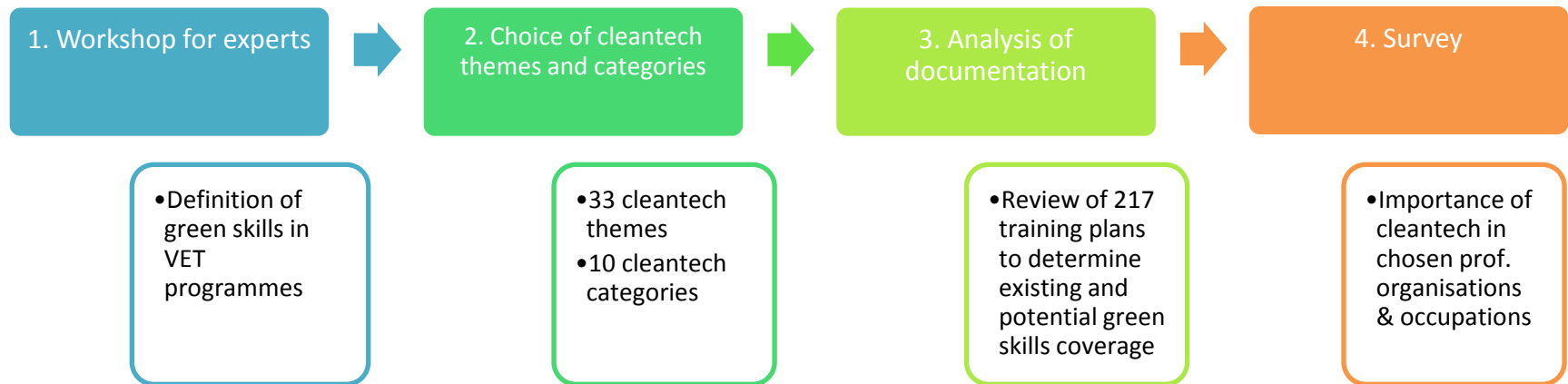
Choice of 33 Cleantech themes

Cleantech fields (based on Cleantech Master Plan)	Cleantech themes
1. Renewable energy	solar heating, photovoltaics, biomass & wood, geothermal energy, water
2. Energy efficiency	electricity, energy-focused building refurbishment & thermal efficiency , industrial processes
3. Energy storage	Thermal, (electro)chemical and mechanical storage
4. Renewable materials	biopolymers/biomaterials, construction materials, natural products
5. Resource and material efficiency	waste separation & recycling, raw material efficiency, waste valorisation.

Cleantech fields (based on Cleantech Master Plan)	Cleantech themes
6. Sustainable water management	natural waters, water use, wastewater treatment
7. Sustainable mobility	energy-efficient vehicles, efficient transport and logistics
8. Sustainable agriculture and forestry	sustainable land management, sustainable management of natural resources, sustainable agriculture and forestry
9. Biotechnology	white, green and yellow biotechnology
10. Environmental technology	measurement techniques, filtration techniques, ecotoxicology

Approach and Methods

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Example of Green Skills covered in competence Profile (Extract) for carpenter

Area of Competence	Occupational competences			
	1	**2**	**3**	**4**
4. Erect wood structures	Erect load bearing structures	Install pre-fabricated building components	Dismantle wood structures	Maintain and restore load bearing structures and building components
5. Lay protective coatings and insulation	Install sub-roof	Lay protective coatings	Lay thermal installation	
6. Install substructures and roof coverings	Assemble substructures for roof coverings	Install roof finishings	Lay outer covering	Lay inner covering
7. Install pre-fabricated products	Install windows and window shutters	Assemble stairs and railings	Install doors	Assemble energy system components

Description of Green Skills in training plan

5.1. Install sub-roof

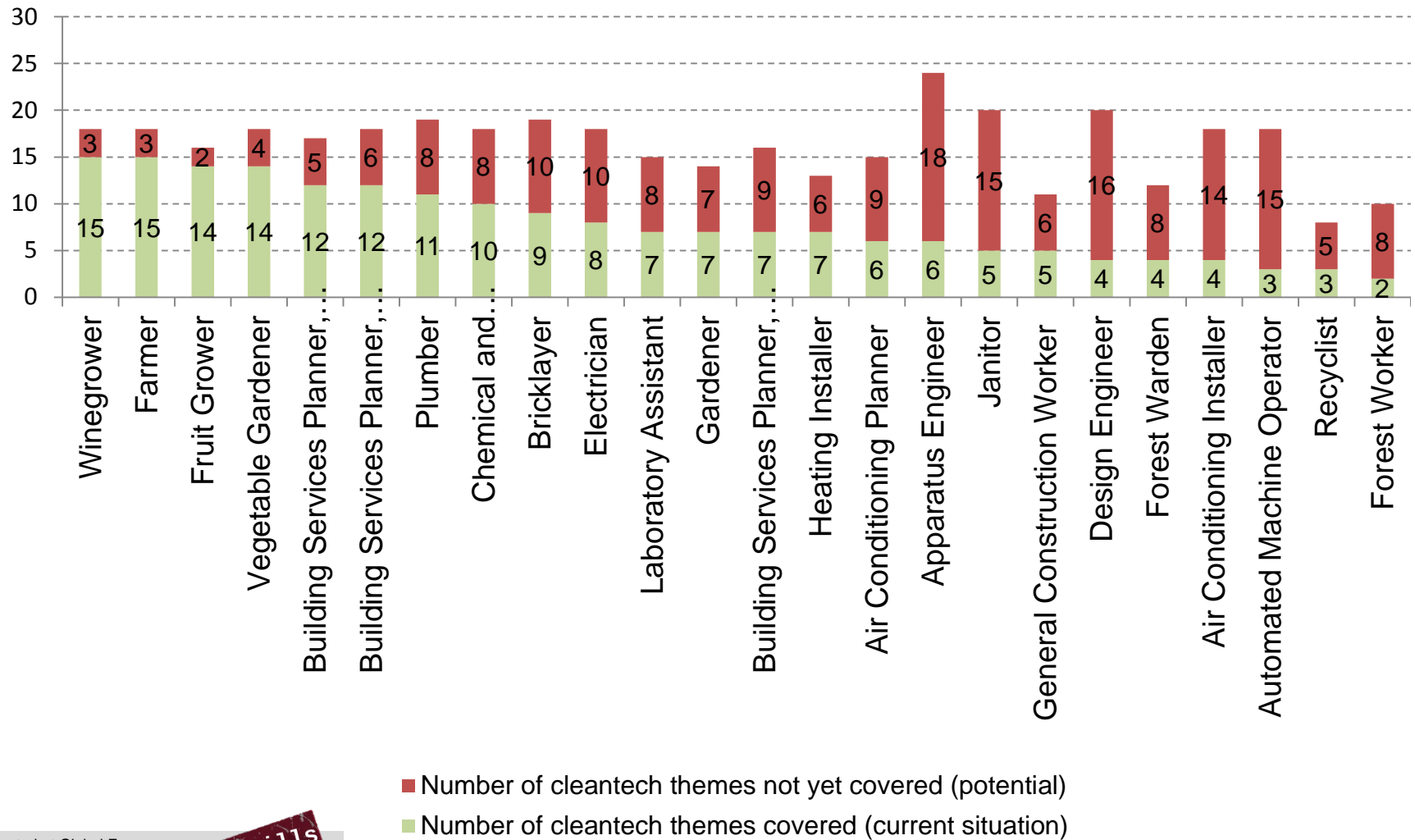| VET school	Host company	Industry training centre
Describe environmental and biologically acceptable alternatives to sub-roofing systems	Use environmentally friendly materials in sub-roofing systems (e.g. fibreboards)	

7.4 Assemble energy system components

VET school	Host company	Industry training centre
Explain the various approaches used to assemble energy systems	Assemble energy system components according to manufacturer instructions (e.g. solar panels and photovoltaics)	Under supervision, assemble energy system components for a given exercise object

… and optimisation potential

Cleantech-Fields	Current situation: 8 Themes covered	Potential: 5 Themes not yet covered
1	solar heating, photovoltaics	biomass & wood
2	energy-focused building refurbishment &thermal efficiency	
4	construction materials, natural products	
5	waste separation & recycling, raw material efficiency	waste valorisation
7		efficient transport and logistics
8		Sustainable management of natural resources sustainable agriculture and forestry
10	ecotoxicology	

Cleantech themes for category 10 occupations

Chart showing cleantech themes for category 10 occupations. Red (top) = Number of cleantech themes not yet covered (potential); Green (bottom) = Number of cleantech themes covered (current situation).

Occupation	Covered	Not yet covered
Winegrower	15	3
Farmer	15	3
Fruit Grower	14	2
Vegetable Gardener	14	4
Building Services Planner,…	12	5
Building Services Planner,…	12	6
Plumber	11	8
Chemical and…	10	8
Bricklayer	9	10
Electrician	8	10
Laboratory Assistant	7	8
Gardener	7	7
Building Services Planner,…	7	9
Heating Installer	7	6
Air Conditioning Planner	6	9
Apparatus Engineer	6	18
Janitor	5	15
General Construction Worker	5	6
Design Engineer	4	16
Forest Warden	4	8
Air Conditioning Installer	4	14
Automated Machine Operator	3	15
Recyclist	3	5
Forest Worker	2	8

■ Number of cleantech themes not yet covered (potential)
■ Number of cleantech themes covered (current situation)

Main conclusions and outcome

- **Green skills in VET programmes include both occupation-specific skills and general green skills.**

- **In many occupations green skills are included in the training plans for VET programmes.**

- **The themes "waste separation & recycling" and "general environmental themes" are included in over 70% of the training plans.**

- **The greatest potential (60% of the training plans) can be found in the theme "waste valorisation".**

- **Industry courses and special learning modules are a good means of encouraging the acquisition of green skills**

- **Fact sheets for each occupation**

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Main conclusions and outcome

Thank you very much

For more information:

www.sfivet.ch

Development of labour market based curricula
- The SFIVET approach -

Development of VET Curricula

Implementation

Analyses

Start VET programme

Demands of labour market / society today and tomorrow