Ressource Holz
Nationales Forschungsprogramm NFP 66
Ressource bois
Programme national de recherche PNR 66
Resource Wood
National Research Programme NRP 66

www.nfp66.ch
Wildhainweg 3, Postfach 8232, CH-3001 Bern

Dialogue platform "Novel ways in bio-refining of wood"

Introduction

NRP 66 «Resource Wood» is a research programme with a very broad scope. It gives attention to a better availability and use of wood, focusing foremost on multiple and material use of wood and less on a mainly energetic exploitation. Thirty research teams are currently at work dealing with a wide range of topics (overview of research projects on www.nfp66.ch). First results are expected this year, the last projects will close at the end of 2016.

Already in the phase of ongoing research, the Steering Committee of NRP 66 intends to initiate discussions about cross-project topics related to the motto of „intelligent use of wood" and to launch the exchange between research, economy/industry and administration/politics.

Four essential issues (fields of dialogue) would be defined to be intensively discussed on moderated dialogue platforms (DP):

DP 1: Advancements in timber construction
Innovative materials and joining technologies in timber constructions, industrial processes

DP 2: Novel ways in bio-refining of wood
Integral and high-grade use of wooden biomass by industrial degradation into materials/fibres, chemicals, fuels and energy

DP 3: Innovative wood-based materials for new applications
Modification and conversion of wood (as recycled or waste wood) into reliable industrial products for new purposes of use

DP 4: Provisioning and sustainable use of wood
Wood use, market forces and market regulation, forest ownership strategies

Objectives of dialogue platforms

The Steering Committee of NRP 66 sees the dialogue platforms as an important instrument for knowledge and technology transfer across projects and for the elaboration of the programme synthesis step by step.

In a first phase, the four dialogue platforms shall contribute to the following objectives:

- Exchange between research, economy/industry and administration/politics
- Identification of potentials for innovation and technology transfer, enabling of new business relationships
- Working out of ideas and stimuli for relevant target groups („rethinking")
- Description of important findings and conclusions for the programme synthesis

Titel of the workshops:

Driving forces and basic conditions of developing a wood-based bio-refinery in Switzerland

Steps of the discussion:

(1) Developing a common understanding of the challenges, opportunities and problems of biorefineries (part I of both workshops)

(2) Developing news approaches and solutions (mostly during the parallel discusison sessions of both workshops)

(3) Closing the gap, contribution for the programm synthesis, redaction of a final statement to bio-refining of wood in Switzerland. (part 4 and 5 of the workshop II)

Key questions

The dialogue platforms **Novel ways in bio-refining of wood** shall work on resp. give some answers to the following **key questions** (focused on Switzerland):

1. Which biorefinery concepts would be best suited to Switzerland or certain regions (in terms of scale/ size and location of the plants, value added and the impact on wood resources)? Which is the best way of bio-refining wood in Switzerland?
2. Is there a market and opportunities for Swiss-Industry for products and services derived from wood biomass in general and in particular in Switzerland (energetic services, specialty chemicals, commodity chemicals or other high-value chemicals based on wood)?
3. How should Switzerland position itself in the global market of bio-refining? Is it more judicious to develop technologies and export engineering know-how or rather to conceive and construct new plants on national territory? Or is a combination of these two options the most promising way?
4. Which framework conditions (i. e. political, economic and regulatory framework, technical norms and standards, societal values etc.) are necessary so as to realize an efficient bio-refining of wood in Switzerland?
5. Is there a future for biorefinery in Switzerland? To what extent do you think the main stakeholders could accept the idea of bio-refining in Switzerland? (public responsibility in the import of products)

Final meeting/ kick-off program synthesis (14/15 April 2016, Olten)

6. Discussion of the input paper for synthesis of the dialog platform

Workshop I

Date: 10th of December 2015

Venue

Pau Klee Zentrum, Bern.

Monument im Fruchtland 3
P.O. Box
3000 Bern 31
Phone +41 (0)31 359 01 01
Fax +41 (0)31 359 01 02
info@zpk.org
With the possibility to visit the exhibition "About Trees". http://www.zpk.org/en/ausstellungen-1.html

The exhibition «About Trees» is interested in trees as a symbol and embodiment of the principles in the contemporary world. The artists allow them to "speak" through their works. In all cultures, since time immemorial, the tree has been seen as a symbol of life in general and as the world tree, and as such is the starting-point for many myths and fairy tales

Chair

Enrico Bellini and Krisztina Beer (Knowledge and Technology Transfer NRP 66)

Minutes / Summary of results

Pieter Poldervaart (scientific editor of DP "Novel ways in bio-refining of wood" in NRP 66)

Programme

	Topic	Speaker / Chair
08.30	Coffee & registration	
09.00	Welcome, goals & schedule of the workshop, NRP 66, key questions	KTT-Team NRP 66 (Bellini/Beer)
09.15	Round of introductions of the participants	
PART 1	**BIO-REFINING WOOD CONCEPTS: Introduction, developing a common understanding of the topic**	
09.30 (20')	**Introduction to product-based bio-refinery concepts:** Overview of existing bio-refinery system designs and their relative advantages / value added. Biochemical routes, thermo-chemical routes and the combination. Overview of the current research within NRP 66 and outside. Assessment methods and supply chain integration	F. Maréchal, EPFL
(10')	Round of questions and reactions	
10.30 (20')	**Biorefinery: a new source for green chemicals?** chemicals overview (lactic acid, succinic acid, acetic acid, propane diol etc.), assessment methods and results for first and second generation biorefineries	Martin Patel, Université de Genève
(10')	Round of questions and reactions	
11.00	Break	
11.20 (30')	**Combined production of fuels and chemicals from wood:** One of the major innovation challenge in the area of biochemistry and bioenergy? Why? Chemical and Process Engineering aspects. Questions and statements for the further discussion	P. Rudolf von Rohr and Thomas Pielhop, ETH Zürich
11.50-12.20	**Plenary discussion.** Key question: Which biorefinery concepts would be best suited to Switzerland or certain regions (in terms of scale/ size and location of the plants, value added and the impact on wood resources)? Which is the best way of bio-refining wood in Switzerland?	Moderation: KTT-team NRP 66
12.20	**Short introduction to the exhibition**	**Peter Fischer, director Zentrum Paul Klee**
12.30	**Lunch with exhibition visit "About Trees"**	

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PART 2	**BIO-REFINING WOOD IN SWITZERLAND: OPPORTUNITIES AND LIMITS** **Energetic sectors: "confrontation" between Academia and Industry**	
13.45 (30')	**<u>Energetic products and services from biomass</u>: Bio-Methane, Electricity and Heat.** State of advancement of research, innovation steps and gaps, market and implementation perspectives. Contribution and potential of wood.	S. Biollaz, PSI and Urs Rhyner, AGRO Energie Schwyz
14.15	Questions and transfer to the groups	
	Parallel discussion sessions: Is there a market and opportunities for Swiss-Industry for products and services derived from wood biomass in general and in particular in Switzerland? How should Switzerland position itself in the global market of bio-refining?	
14.30- 15.30 (60')	**Group 1:** **ENERGETIC PRODUCTS and SERVICES. Focus on gas, electricity and heat from wood-biomass** **Animation:** Prof. Dr. Oliver Kröcher, Head, SCCER BIOSWEET Discussion with representatives and invited suppliers from gas, electricity and heat, energy users, energy and technical experts and associations	**Group 2:** **CHEMICALS PRODUCTS BASED ON WOOD-BIOMASS** ***Topic: From commodity chemicals to high value chemicals: utility and markets for such products?*** **Animation:** Paul Dyson, EPFL with Enrico Bellini (KTT NRP66) Discussion with researcher and reprensentatives of the industry and associations
15.30	**Short break and transfer to the plenary session**	
15.45	**Plenary session an discussion:** Feedbacks of the groups (2x15')	
PART 3	**BIO-REFINING WOOD CONCEPTS:** **Developing a common understanding, news aspects and outlook**	
16.15 (30')	**<u>Economical aspects:</u> Key factors for the economic modelling of lignocellulosic bio refinery concepts** The major challenge before investing in lignocellulosic bio refining plants lies in the identification and calculation of major cost factors, revealed mainly in CAPEX and OPEX costs. Major cost driving factors, such as price of feedstock, scale of plant, investment costs, output products and others and their impact on the economy of scale must be modelled and analyzed. Additional "soft" factors play vital roles in the success of any economic model.	Dr. Guido Hora, Fraunhofer Institute for Wood Research
16.45	Conclusions & outlook of next workshop	KTT-Team NRP 66 (Bellini/Beer)
17.00	**End**	