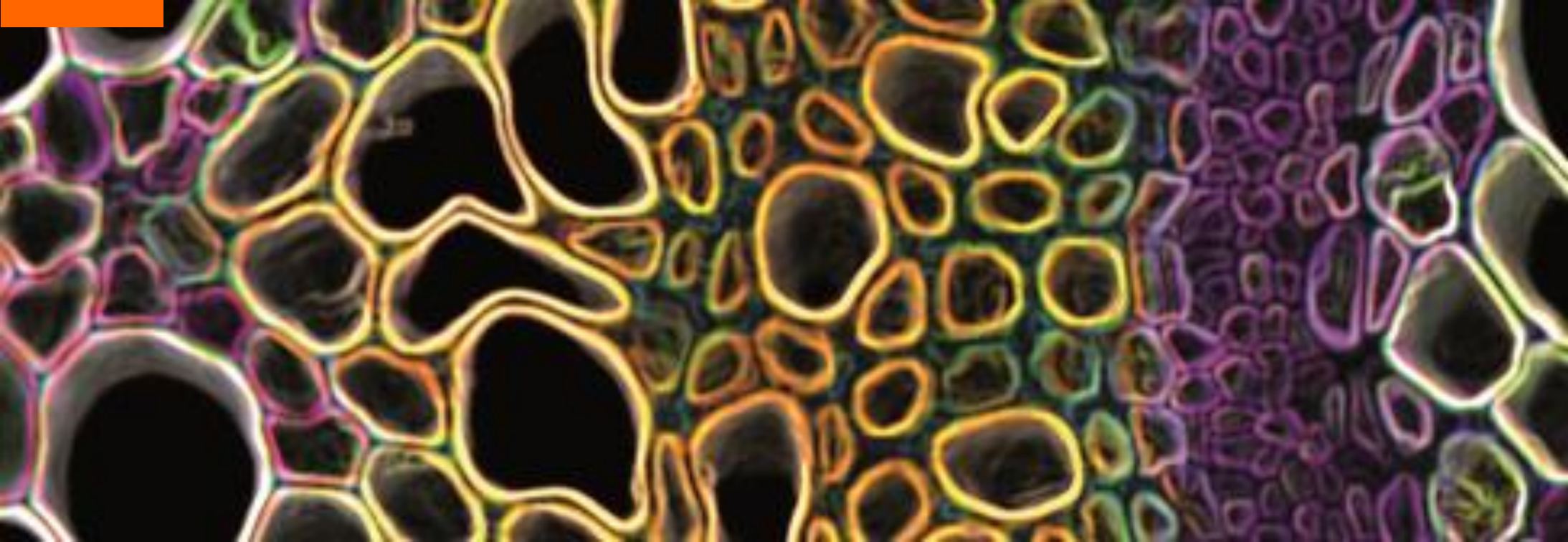




Driving forces and basic conditions of developing a wood-based bio-refinery in Switzerland

Workshop I – December 10, 2015

Zentrum Paul Klee, Bern



NRP 66 "Resource Wood" : A holistic approach

The goals of NRP 66 “Resource Wood”

In particular, the programme aims to achieve

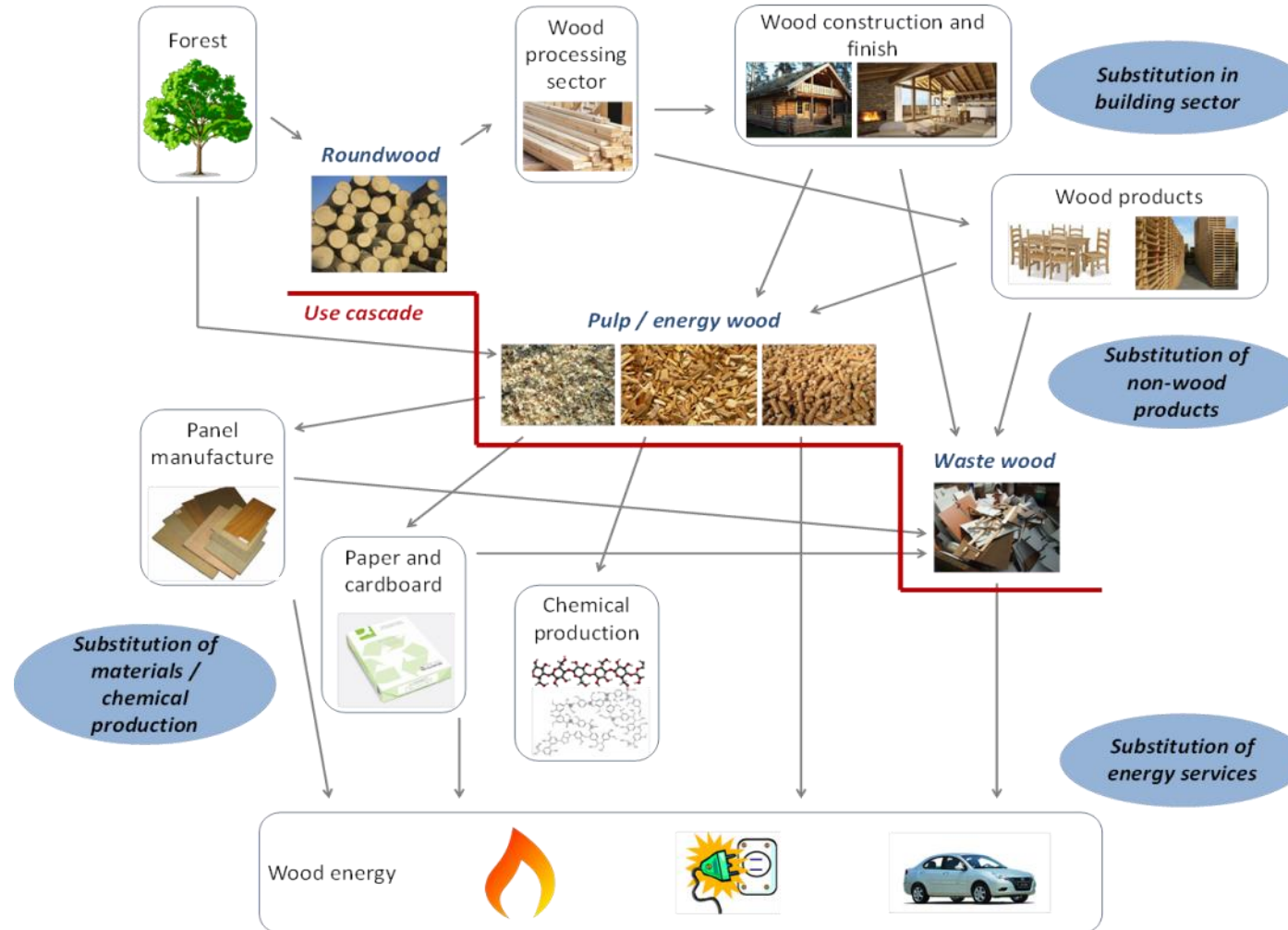
1. a broader understanding of wood-based material flows and improvements to wood supplies,
2. new knowledge and technologies for using wood as a basic component in chemical products and for manufacturing new composite materials,
3. further technical advances in the generation of power from wood and in using it as a material for structures and buildings, and
4. competitiveness through added value in wood-based industries; enhanced skills and research capacities in Switzerland.

A plea for using wood more intelligently

- Wood is one of the most significant renewable raw materials
- Its use can still be optimized to face future challenges
- There is a need for a system-wide integrative perspective from the different angles of sustainability

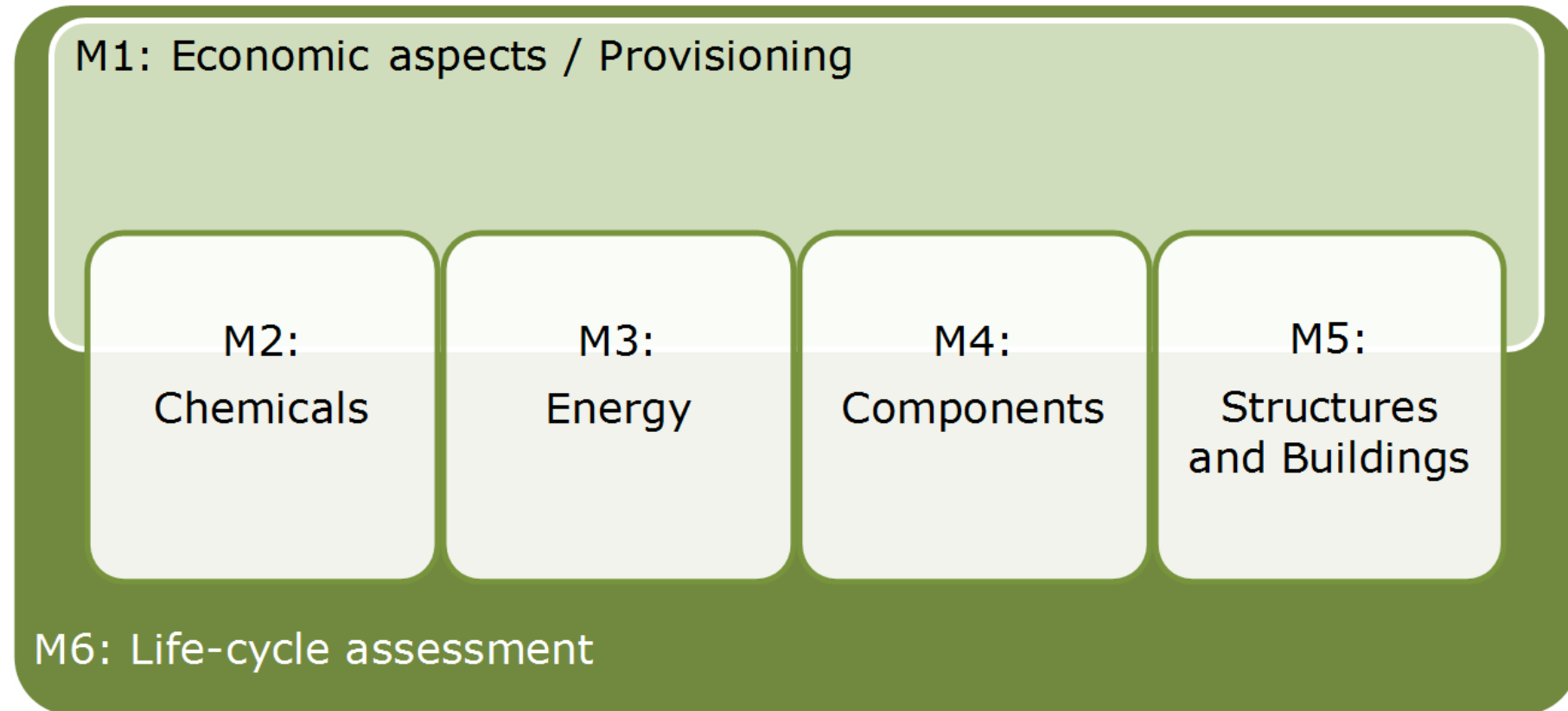


“Cascade use”: the buzzword for recovering useable materials and/or energy from wood in the future

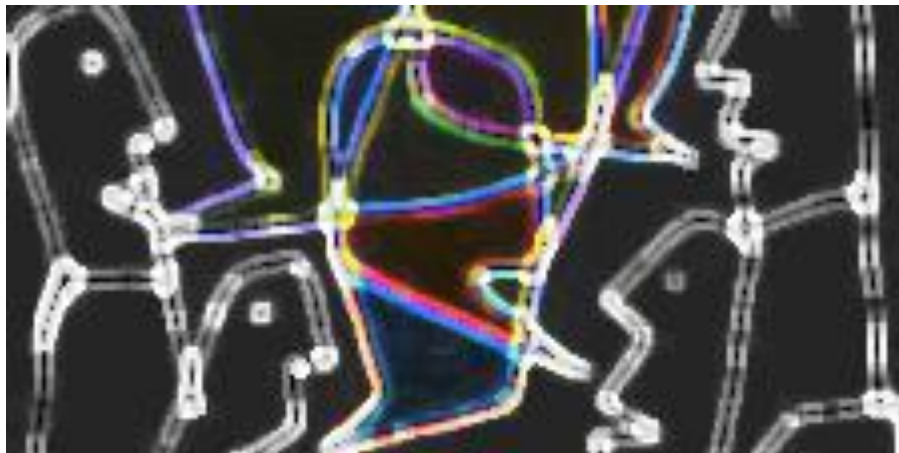
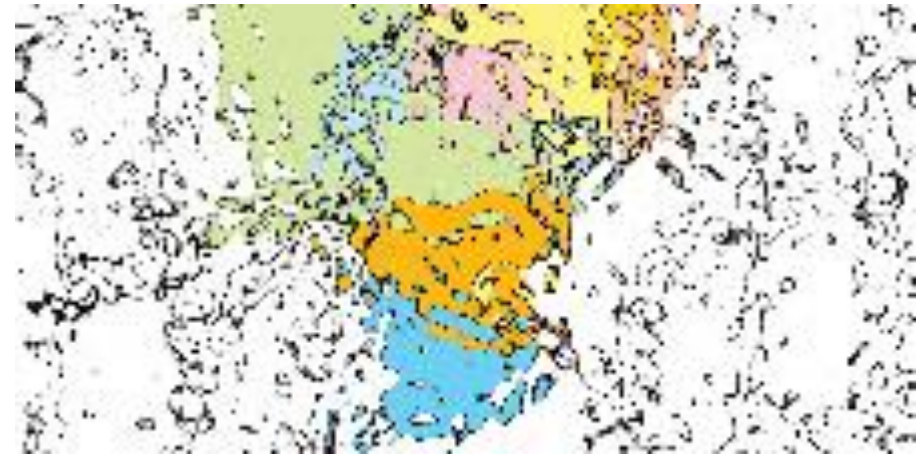


Source: S. Hellweg

Six thematic modules covering most links of the wood value chain



Four dialogue platforms to promote exchange between theory and practice



Objectives of the dialogue platforms



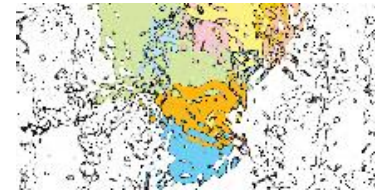
Objectives of the dialogue platforms

- Exchange between research, economy, industry, authorities and 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

The dialogue platforms within NRP 66

Advancements in timber construction

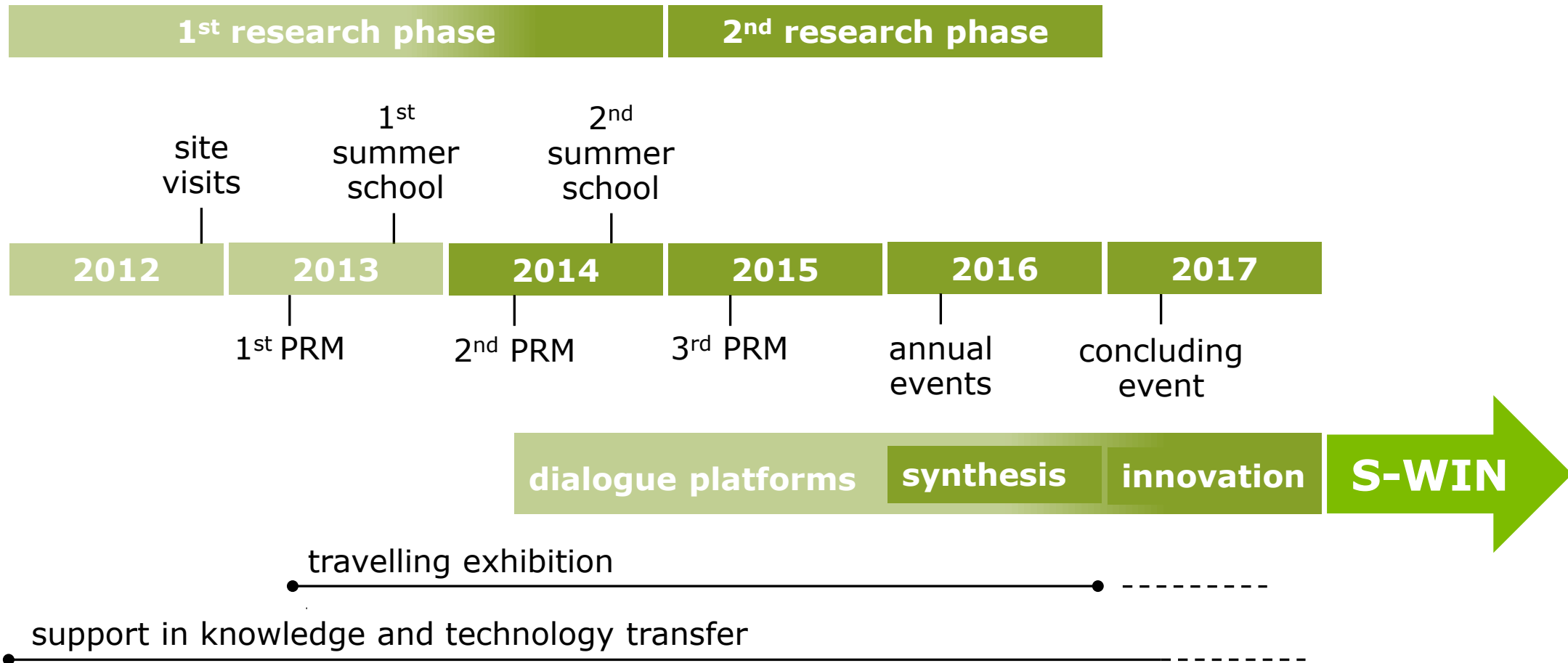
Novel ways in bio-refining of wood



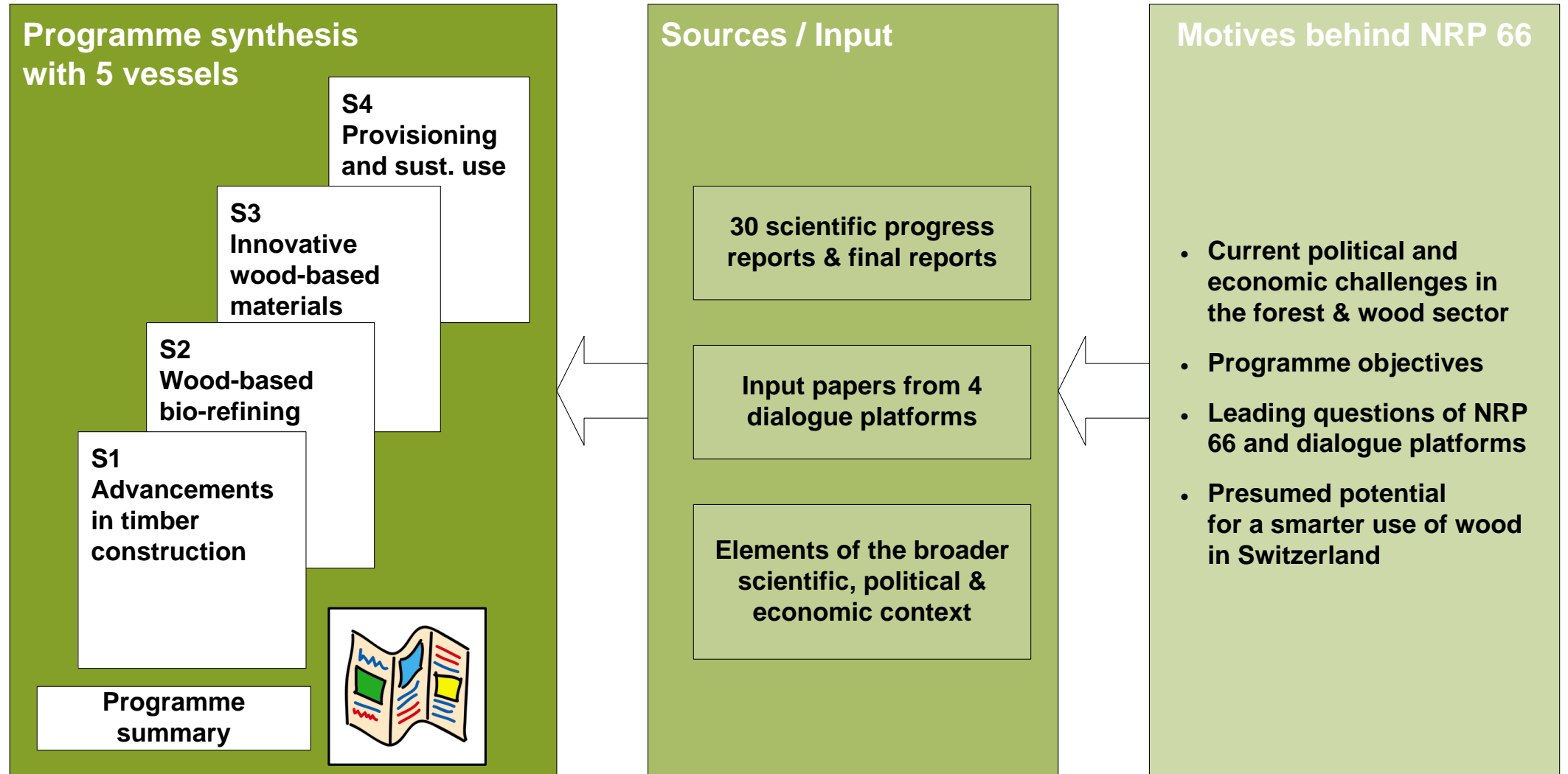
Innovative wood-based materials for new applications

Provisioning and sustainable use of wood

NRP 66 schedule



Process of programme synthesis NRP 66

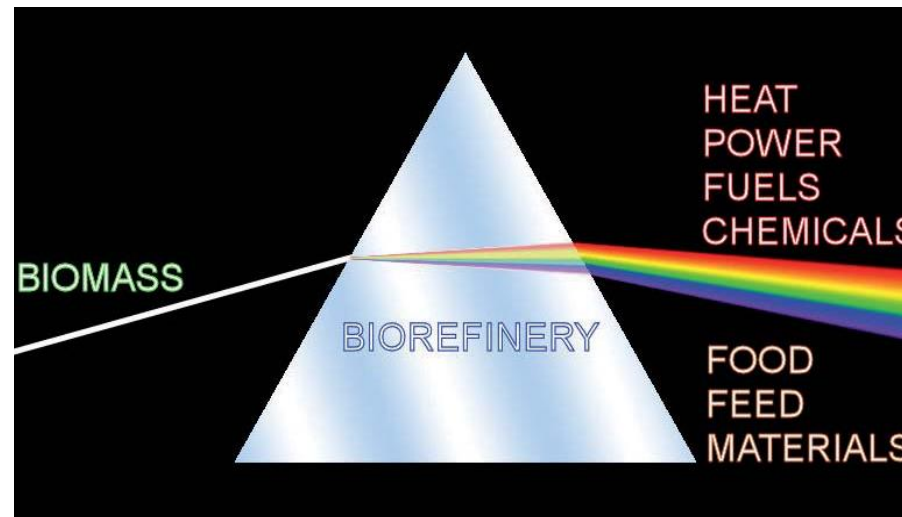




Dialogue field „Novel ways in bio-refining of wood“: Issues, questions and partners

Biorefinery concept

- The sustainable processing of biomass into a spectrum of marketable products and energy.
- A facility that integrates biomass conversion processes and equipment to produce fuels, power, heat, and value-added chemicals from biomass



Source: IEA: Biorefineries: adding value to the sustainable utilisation of biomass

Issues and key questions

- **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?
 - **Is there a market and opportunities for Swiss industry** for products and services derived from wood biomass in general and in particular in Switzerland (energy services, specialty chemicals, commodity chemicals or other high-value chemicals based on wood)?
 - **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?
- > Answer: **thematic synthesis S2 as part of the programme synthesis**

Dialogue partners

Energy sector

- _ Suppliers of electricity, heat and fuels
- _ Engineering (design of plants, processing, ...)
- _ Energy users (biofuels for transportation, aviation, ...)
- _ Oil industry, classical refineries
- _ Market specialists, trading specialists
- _ Bio-refining abroad

Agencies & networks

- _ SCCER biosweet, S-WIN
- _ Agency for Renewable Energies and Energy Efficiency (AEE Suisse)
- _ Cleantech Schweiz
- _ Holzenergie Schweiz
- _ CTI

Chemical sector

- _ Chemical industry
- _ SusChem Technology Platform
- _ scienceindustries
- _ Food and packaging industry

Authorities

- _ Swiss Federal Office of Energy (SFOE)
- _ Federal Office for the Environment (FOEN)
- _ Federal Office for Agriculture (FOAG)
- _ State Secretariat for Economic Affairs (SECO)
- _ Cantonal forest offices

Part 1: Bio-refining wood concepts

Introduction & developing a common understanding of the topic

- **Introduction to product-based bio-refinery concepts.**
F. Maréchal, EPFL Valais Wallis
- **Biorefinery: a new source for green chemicals?**
Martin Patel, Université de Genève
- **Combined production of fuels and chemicals from wood.**
P. Rudolf von Rohr, ETH Zürich
- **Plenary discussion**

Part 2: Bio-refining wood in Switzerland: Opportunities and limits

- **Energy products and services from biomass: Bio-methane, electricity and heat.**

S. Biollaz, PSI and Urs Rhyner, AGRO Energie Schwyz

- **Parallel discussion sessions**

Are there a market and opportunities for Swiss industry for products and services derived from wood biomass in general and in Switzerland in particular? How should Switzerland position itself in the global market of bio-refining?

Part 2

- **Group 1:**
ENERGY PRODUCTS AND SERVICES. Focus on gas, electricity and heat from wood biomass.
Chair: Prof. Dr. Oliver Kröcher, Head, SCCER BIOSWEET
- **Group 2:**
CHEMICAL PRODUCTS BASED ON WOOD BIOMASS
Topic: From commodity chemicals to high value chemicals: Which utility and markets for such products?
Chair: Paul Dyson, EPFL with Enrico Bellini, Knowledge & Technology Transfer NRP 66
- **Plenary session and discussion**
Feedbacks of the groups (2x15')

Part 3: Economic aspects

- **Key factors for the economic modelling of lignocellulosic bio-refinery concepts**

Dr. Guido Hora, Fraunhofer Institute for Wood Research



Outlook

Workshop II on February 5, 2016 at BFH-HAFL in Zollikofen

- **Part 1:** Global view of the biofuels market and trading of bio-products; *Neste Oil (Suisse) SA and E4tech solicited*
- **Part 2:** “Confrontation” between academia and industry. Representatives from Lonza AG and Scania Schweiz
- **Part 3:** two parallel discussion sessions
- **Part 4:** Foundations and frameworks conditions. With representatives of FOEN, cantonal forest offices, Swiss Customs Administration, Federal Department of Finance etc.

Deadline for inscription: January 15, 2016

Thank you for your attention and participation!
www.nrp66.ch

