SCCER SoE

SWISS COMPETENCE CENTER for ENERGY RESEARCH
SUPPLY of ELECTRICITY

WP5 Pilot & Demonstration Projects

Demo-5 : Small Flex

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In cooperation with the CTI

Energy
Swiss Competence Centers for Energy Research

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Commission for Technology and Innovation CTI

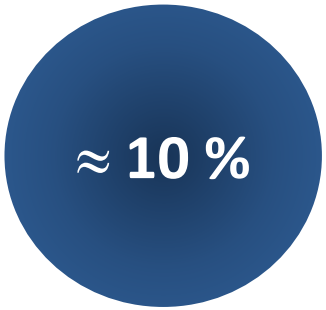
Context

Small hydro Production & Potential

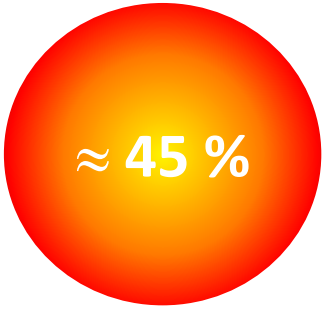
Power	*Production 2013 *OFEN*		*Potential 2015 *RPC waiting list*	
P < 300 kW	*≈310 GWh*	9%	*≈85 GWh*	8%
300kW < P < 1 MW	526 GWh	14%	*≈190 GWh*	17%
1 MW < P < 10 MW	2'817 GWh	77%	*≈845 GWh*	75%
Total	**≈3'653 GWh**		***≈1'120 GWh***	

In 2016, 42 new commissioning of SHPs with a total installed power of 50 MW*

*Newsletter PCH 2017

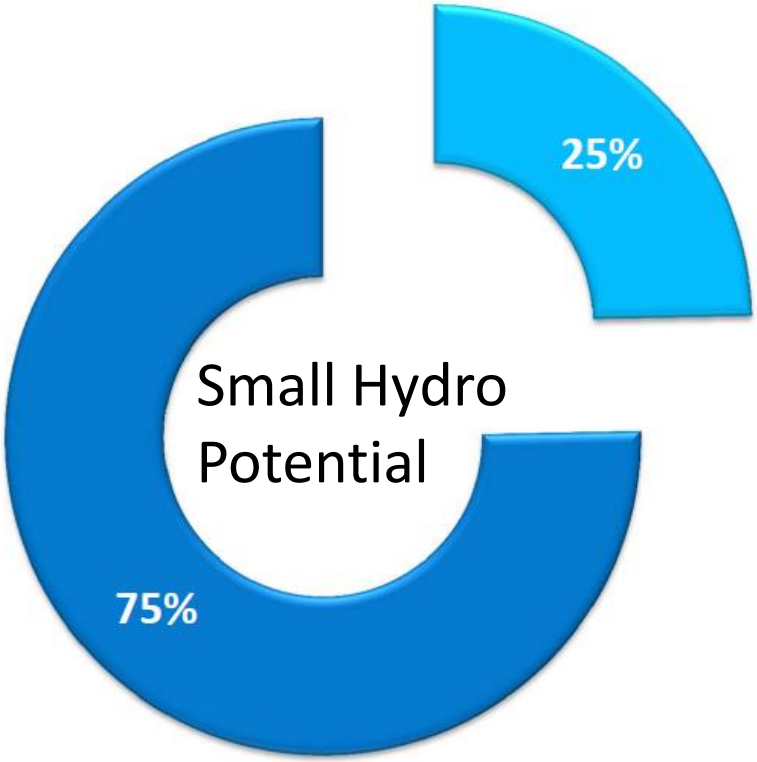


of hydroelectricity production



of hydroelectricity potential

Sccer SoE Strategy for Small Hydro



- P < 1MW

Technological innovations to improve robustness, reduce costs and harvest new potential.

- 1 MW < P < 10 MW

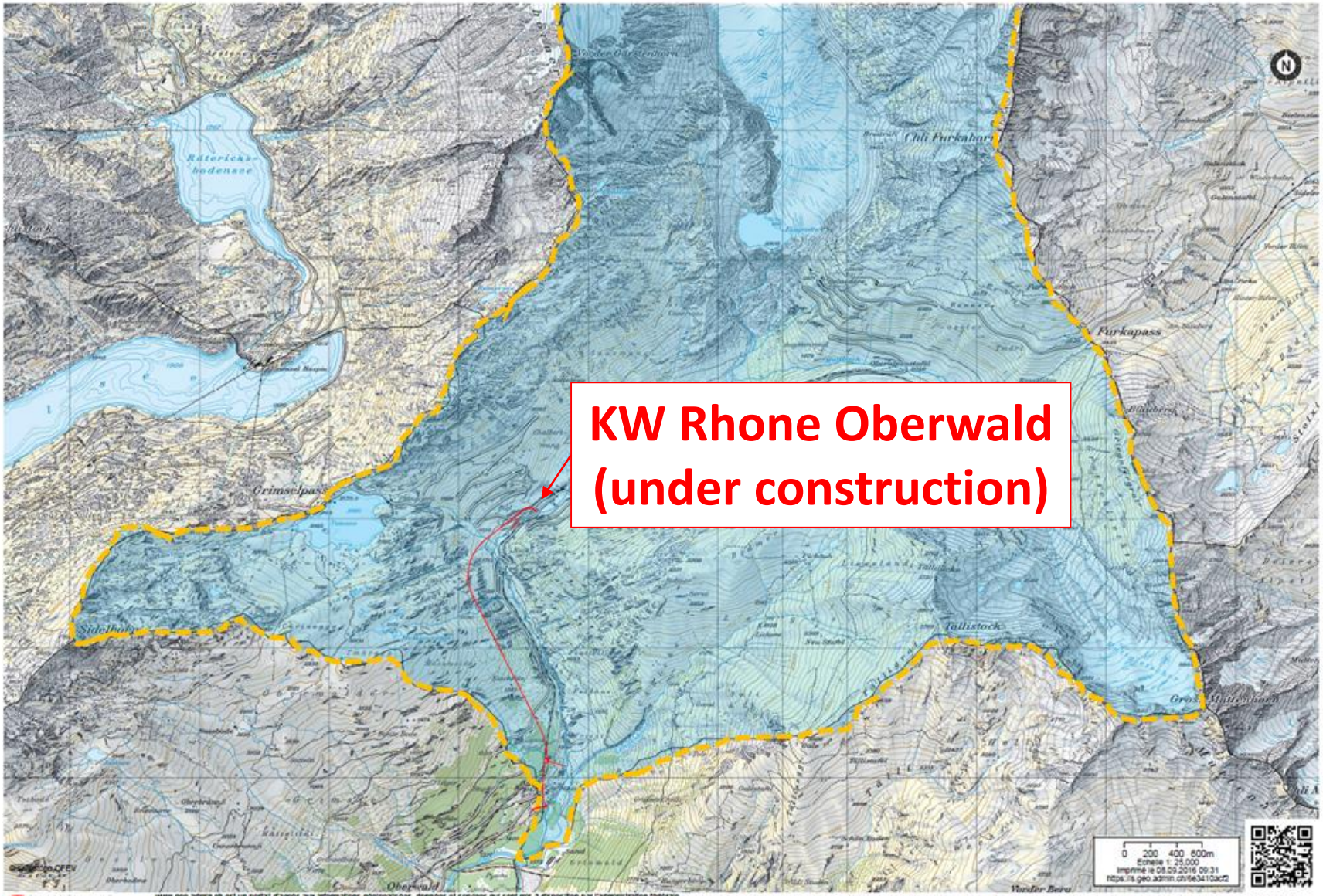
Scientific support to facilitate new projects and assess the possibility for SHP to provide ancillary services whilst remaining eco-compatible.

A demonstrator for small hydro, why ?

Apply the outcome of recent research by SCCER-SoE partners to pilot facilities with the aim of providing operational **flexibility** to SHP owners.

- How can intra-day, intra-week or intra-monthly storage be added to a given scheme ?
- What are the consequences of enlarging the operational range of the machines ?
- How can be the added-value of meteorological forecast in terms of power generation and prediction of sediment inflows ?
- How are the consequences of a more flexible operation to the downstream river reach, in terms of hydropeaking consequences and river morphology?

Demo-5 : 1st Case Study



Demo-5 : KW Gletsch-Oberwald

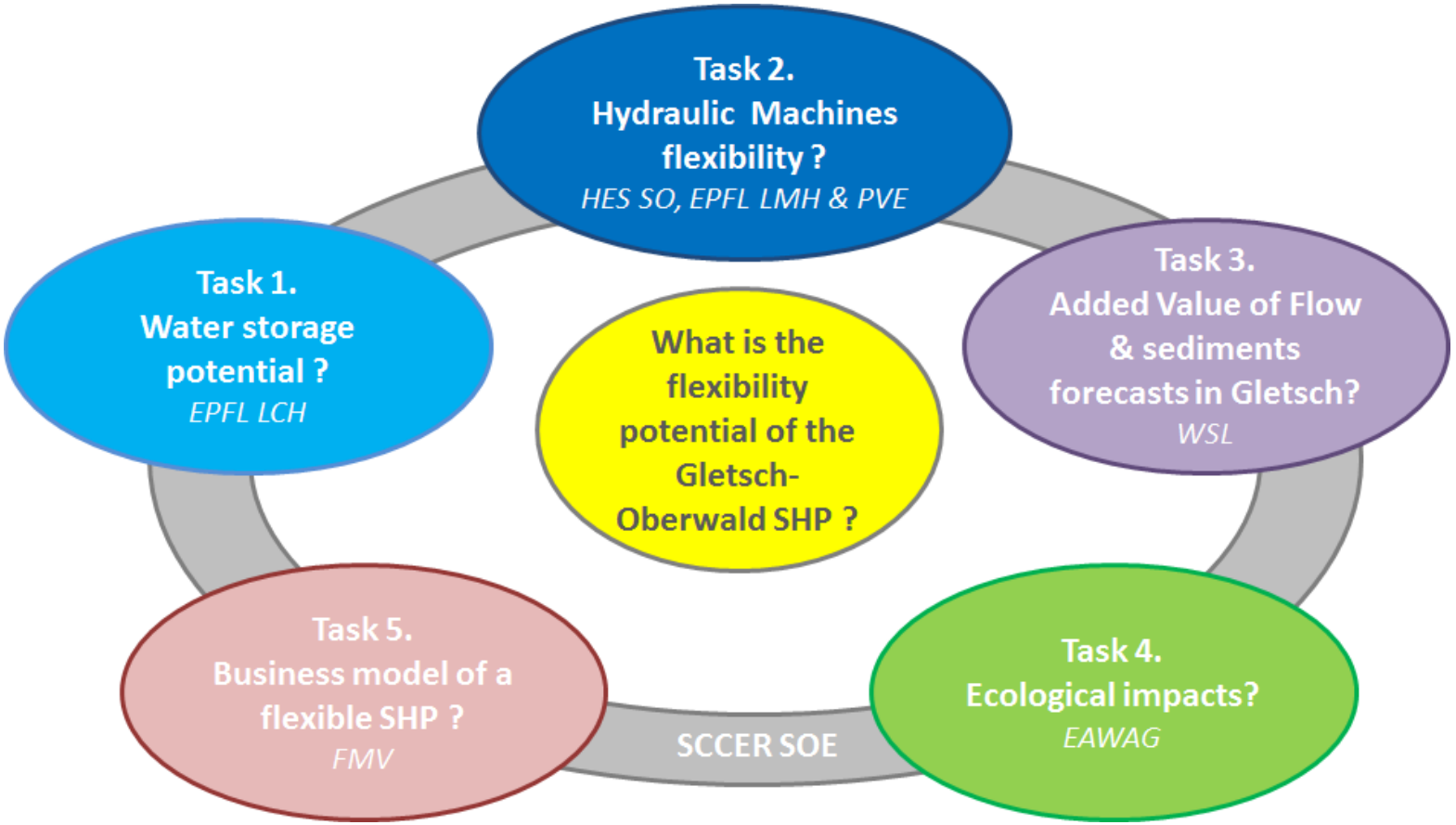
2 Pelton turbines with 6 injectors

Run-of- the-river power plant

Net head :	**288 mCE**
Installed discharge :	**5.7 m^3/s**
Installed capacity :	**14 MW**
Mean gross capacity :	**4.68 MW**

Commissioning : end of 2017

Demonstrator for SHP SmallFLEX



Demonstrator for SHP SmallFLEX

Status of the project : submitted for financial support in June 2017.

Expected results :
The methods developed in this project may be applicable to affect positively **several hundred high-head plants** with no or little storage, resulting in an annual revenue increase of 5-10% from increased value of the winter production. A small increase in energy production (< 5%) is foreseen, due to an improved use of excess waters at high-altitude intakes above the residual discharge releases.

First insights in our project : 4 posters ☺