CHINA EUROPE Water Platform

Sustainable Hydropower Use and Integration in China and EU (SHUI-ChE

Lot 4

Tomas Andersson SWAM

A green economy: Water-Energy-Food-Ecosystem-Nexus

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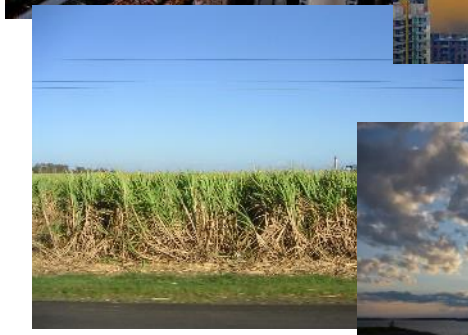
Energy production

Industry & urbanization

Tradeoffs & synergies

Primary prod

Ecosystem services



Based on Phillips, et.al. (2008).
Söderbaum & Granit 2014, the Political Economy of Regionalism

Sustainable Hydropower Use and Integration in China and Europe (SHUI-ChE)

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1. A four-year (2018-2021) project under the China Europe Water Platform (CEWP)

2. Financed by EU Partnership Instrument (80%) and European partners (20%)

3. SHUI-ChE = Waterwheel, a symbol of water and energy security

Sustainable Hydropower Use and Integration in China and Europe (SHUI-ChE)

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1. **Overall objective:**

Enhance the co-generation and exchange of knowledge through synthesizing and sharing experiences and best practices between EU and China targeting sustainable hydropower in realizing low-carbon development pathways and market integration

2. **SHUI-ChE** = Waterwheel, a symbol of water and energy security

3. 5 European partners, 6 Work Packages and 2 dimensions of sustainable hydropower

Specific objectives

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- To enhance the **co-generation and application of knowledge** on “green” hydropower operation and development, as well as tapping hidden energy potentials and hydropower scheme optimisation.

- To enhance the **co-generation and application of knowledge** on the “blue storage” function and the **role of hydropower for enhancing regional energy cooperation** and renewable energy system transition in the context of low carbon development in both EU and China.

- To identify **policy and technology** needs and options for realizing the opportunities in both “green” and “blue” dimensions of sustainable hydropower, and developing and demonstrating supporting tools for policy and decision making; and

- To **facilitate business development** through demonstration and the development EU-China Sustainable Hydropower Innovation Network (ECSHIN).

Core activities/ Project focus

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- Green standards in small hydropower development and implementation
- Tapping hidden energy potentials and optimization of hydropower schemes towards best possible generation efficiencies
- Hydropower as enabler for enhancing regional energy cooperation and promoting renewable energy system transition
- Integrated water and energy planning in EU and China

Partners in Lot 4

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European Consortium Partners

1. Swedish Agency for Marine and Water Management (SwAM) (LEAD)
2. The Stockholm Environment Institute (SEI)
3. University of Natural Resources and Life Sciences Vienna (BOKU)
4. Federal Ministry of Sustainability and Tourism, Austria (BMNT)
5. The Department of Industrial Engineering of University of Florence (UNIFI)

Chinese Partners such as:

1. Nanjing Hydraulic Research Institute (NHRI) (LEAD)
2. The International Center of Small Hydropower (ICSHP)
3. National Research Center for Sustainable Hydropower
4. Hangzhou Regional Center (Asia-Pacific) for Small Hydro Power (HRC)
5. Changjiang River Scientific Research Institute (CRSRI)
6. Beijing Normal University (BNU)

PI Lot 4 **SHUI-ChE** Project

Sustainable Hydropower Use and Integration in China and Europe

WP 1: Overall management and coordination
Lead: SwAM

WP 2	WP 3	WP 4	WP 5
Green hydropower standards as tool towards sustainable existing and planned small hydropower Lead: BOKU, BMNT	Tapping hidden energy potentials of hydropower schemes and optimization towards higher efficiency Lead: BMNT	Hydropower as enabler for regional energy cooperation and renewable energy system transition, LEAD: UNIFI	Integrated Water and Energy Planning LEAD: SEI

WP 6: EU-China Sustainable Hydropower Innovation Network (ECSHIN)
Lead: SwAM

6 work packages (WPs) and 2 dimensions

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1 overall management and coordination, **4** thematically focused areas of activities and **1** network development:

- WP 1: Overall Management and Coordination (SwAM)
- WP 2: Green hydropower standards as tool towards sustainable existing and planned small hydropower (BMNT and BOKU)
- WP 3: Tapping hidden energy potentials of hydropower schemes and optimization towards higher efficiency (BMNT)
- WP 4: Hydropower as enabler for regional energy cooperation and renewable energy system transition (UNIFI)
- WP 5: Integrated water and energy planning (SEI)
- WP 6: EU-China Sustainable Hydropower Innovation Network, ESCHIN (SwAM)

Main activities accomplished during inception phase

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WP 1: Overall management and coordination

1. Management of contractual matters

2. Monitoring and coordination of the implementation and delivery of all Lot 4 WPs

3. Project reporting and overall financial management

4. Coordination with Lot 5/CEWP EU Secretariat

5. Coordination with key partners in China (Lead partner in China)

Main activities accomplished during inception phase

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WP 2+3: Green hydropower standards as tool towards sustainable existing and planned small hydropower + Tapping hidden energy potentials of hydropower schemes and optimization towards higher efficiency

1. Establishment of cooperation with ICSHP (MoU)

2. literature review and initial evaluation of green hydropower standards

3. Initial implementation of the Panxi case study (3 activities)
   - Assessment of status quo
   - List of required data
   - Planning of study visit and workshop

Main activities accomplished during inception phase

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WP 4: Hydropower as enabler for regional energy cooperation and renewable energy system transition

- Engagement of partners in Europe and China

- Literature review on technologies and on the renewable energy system scenario in China. (Ongoing)

- Literature review from theoretical point of view regarding different methodologies for Cost and Benefit Analysis of PHS

- Screening of PHS potential (ongoing)

Main activities accomplished during inception phase

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WP 5: Integrated Water and Energy and Planning

- Partnership engagement in China

- Background policy research on the emerging role of hydropower as an “energy storage” and a balancing power in the clean energy transition

- Contributions to other WPs (1,4 and 6)

Main activities accomplished during inception phase

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WP 6: EU-China Sustainable Hydropower Innovation Network (ECSHIN)

- Stakeholder scoping and engagement (Members and MoU)

- Launch of the ECSHIN in Europe (Launch in China this afternoon)

Policy Themes and Impacts (I)

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Overall, we target **four** specific policy themes and **one** general awareness-raising

- Implementation of the green standard for small hydropower
- Ecological environment restoration of the Yangtze Economic Belt (- *a major development strategy during the 13thFYP*)
- Development of pumped storage hydropower (PSH) (- one of the top priority areas of hydropower development during the 13th FYP)
- Reducing the waste of solar and wind power and accelerating the renewable energy transition
- **Awareness of water and energy integrated planning**

Methodology
-three building block with three steps

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Building blocks:

- Articulating the opportunities
- Realizing the opportunities
- In-deph analysis and demonstration

Steps:

- Policy and solution oriented synthesis
- Exchange events
- Policy brief and recommendations

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Thank you!

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