

Small Hydropower 小水电

CEWP Annual Meeting

中欧水资源交流平台（CEWP）年度会议

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Birgit Vogel

RBM solutions

Liu Heng

International Centre
for Small Hydropower

国际小水电中心



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Small Hydropower and CEWP 小水电和CEWP

4 CEWP Work Areas

CEWP的4个工作领域

- ☉Water and Urbanisation水和城市化
- ☉Water and Energy Security水和能源安全
- ☉Water and Food Security水和粮食安全
- ☉River Basin Management and Water Ecology Security 流域管理和水生态安全

Small Hydropower Co-Lead Partnership between China & Austria
planned to be part of the CEWP Work Area **WATER AND ENERGY SECURITY**

按计划，中国和奥地利小水电联合活动伙伴关系将作为CEWP工作领域水合能源安全的一部分

....together with the Co-Lead (SE-UK-China): Water-Energy-Food Nexus

以及联合活动（SE-UK-China）：水-能源-食品之间的关系



CEWP Work Area

Water and Energy Security

CEWP 工作领域 水和能源安全



- ⊙ Small Hydropower as part of highly relevant Work Area 小水电是高度相关工作领域的一部分
- ⊙ Water and Energy are closely linked and interdependent 水和能源紧密相连且相互依存：

Energy FROM Water 来自水的能源	<p>Water use in energy resource extraction & energy conversion 能源资源开采和能源转化中的水利用</p> <p>Opportunities for <u>innovative and more efficient</u> approaches: <u>创新的机遇和提高效率的方法</u>:</p> <ul style="list-style-type: none">- Fossil fuel, renewable and hydropower systems. - 化石燃料、可再生能源和水电系统- Efficient energy production enhancing share of renewables - 高效能源生产提高可再生能源的比例- Tapping hidden potentials of existing hydropower schemes - 挖掘现有水电项目的隐藏潜力- Innovative solutions for planned schemes. - 创新解决方案的计划方案
Energy FOR Water 用于水的能源	<p>Water supply, treatment, distribution and use in rural, urban and industrial settings 农村、城市和工业环境中的水供应、处理、配送和使用</p>
<p>Water FOR Energy <u>requires</u> Water and Energy Security 用于能源的水 <u>需要</u> 水和能源安全</p>	

CEWP Work Area

Water and Energy Security

CEWP 工作领域 水和能源安全

Overall Goals of this Water and Energy Work Area

该水和能源工作领域的总体目标

⊙Contribute to overarching aims of CEWP

⊙有助于CEWP的首要目标

⊙Generate policy recommendations and joint projects by involving governments, businesses, and researchers (EU & China) in a comprehensive dialogue

⊙通过将政府、企业和研究人员（欧盟和中国）纳入全面对话，生成政策建议和联合项目

⊙Elaborate outcomes for Water and Energy that provide a strategic and prioritized, operational framework

⊙水和能源的详尽结果将提供策略和优先的商业框架

⊙Synthesize and communicate policy / business exchanges on water and energy issues between China and the EU

⊙有关中国和欧盟之间水和能源问题政策与业务交流的综合和沟通



Small Hydropower WITHIN Water and Energy Security 水和能源安全中的小水电

Together with the Co-Lead on Water-Energy-Food Nexus, *Small Hydropower*

Co-Lead between China and AT will:

连同有关水-能源-食品之间关系的联合活动， *中国与奥地利之间的小水电联合活动*

◎Jointly contribute to achieve the overarching aims of CEWP Work Area

Water and Energy Security

◎共同致力于CEWP工作领域水和能源安全的总体目标

◎Small Hydropower and Water-Energy-Food Nexus are a complementary team

◎小水电和水-能源-食品之间关系是互补的

What are the specific contributions of the Small Hydropower
Co-Lead and what will be the next steps ?

联合活动对于小水电的具体贡献以及后续步骤有哪些？





Small Hydropower Co-Lead Background and Activities 小水电联合活动背景和活动

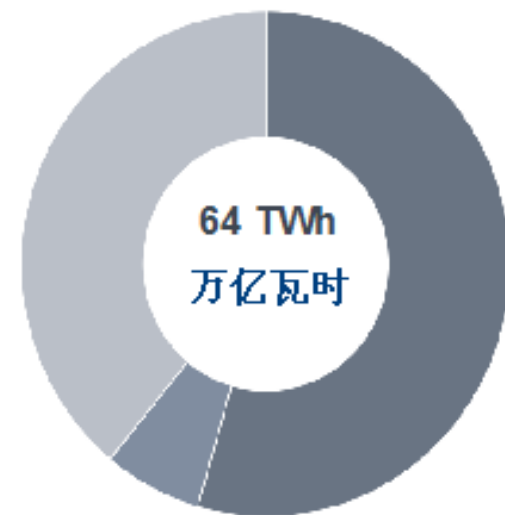
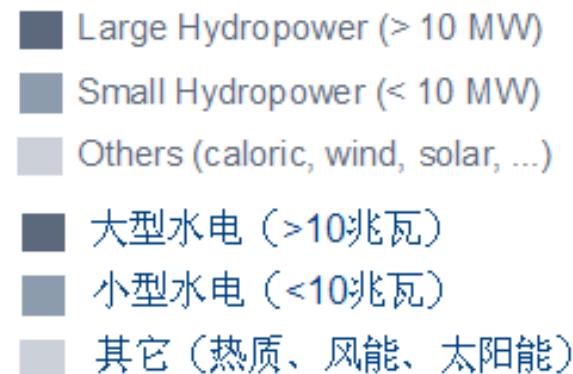


Austria and Hydropower

基本情况 – 奥地利的电力生产

- ⊙ Austria is a ‘hydropower’ country
- ⊙ Total Electricity Generation: 64 TWh
- ⊙ About 2/3 of the Austrian electricity is generated by hydropower

- ⊙ 奥地利是一个“水电”国家
- ⊙ 总发电量：64万亿瓦时
- ⊙ 奥地利发电量的大约2/3通过水电生产



Source: E-Control
来源: E-Control

In addition, other renewable energy sources gain importance
此外，其它可再生能源也很重要（例如：风能、太阳能光伏等）

China's SHP Development

中国小水电的发展

Theoretical SHP (< 50 MW) potential in China: 170 GW
128 GW are economically exploitable

中国小水电的潜力在理论上为1.7亿千瓦，其中1.28亿千瓦在经济上是可开发的（小水电的定义<50兆瓦）。

By the end of 2013:

- ◎ SHP stations in operation: **46,800**
- ◎ Total installed capacity: **71,000 MW**
- ◎ Annual generation: **220,000 GWh**

截止到2013年年底:

- ◎运转中的小水电站 **46,800座**
- ◎总装机容量 **7100万KW**
- ◎年发电量 **22000 亿KWh**



Small Hydropower Co-Lead Austria – China 小水电联合活动 奥地利-中国

Small hydropower cooperation between Austria and China is based on mutual benefits towards research and business opportunities:

奥地利和中国小水电合作基于研究和商业机会的互惠互利：

- ◉ Similar background and challenges regarding hydropower
- ◉ 与水电类似的背景和挑战
- ◉ Increase share of renewable energy sources
- ◉ 提高可再生资源的份额
- ◉ Optimise energy generation towards economic efficiency
- ◉ 优化发电以提高经济效益
- ◉ Enhance resource efficiency: generation of more energy by drop
- ◉ 提高资源利用效率：产生更多的能源
- ◉ Tap hidden potentials and make efficient use of these
- ◉ 挖掘隐藏的潜力并有效利用
- ◉ Limit hydropower impacts on aquatic environment
- ◉ 限制水电对水生环境的影响
- ◉ Functioning / fully adapted governance and policy mechanisms
- ◉ 运行/完全使用治理和政策机制

Small Hydropower Co-Lead Cooperation Activities 小水电联合活动

SO FAR:

到目前为止:

◎ Joint Co-Lead activities developed for 1 implementation year

◎ 制定第1年实施的联合活动

◎ Available on the CEWP website

◎ 可以在CEWP网站上获得

NOW:

现在:

◎ Further development of activities to fit 3 implementation years

◎ 进一步制定3年实施的活动

◎ Detailed activities are currently being developed to fit the needs of

◎ 目前正在制定详细的活动，以适应下来需求:

◎ overall CEWP Work Programme

◎ CEWP Work Area on Water and Energy Security

◎ EU Partnership Instrument

◎ 整体CEWP工作计划

◎ CEWP工作领域水和能源安全

◎ 欧盟伙伴工具



Small Hydropower Co-Lead Overview: Cooperation Activities 小水电联合活动概况



Implementation Year 1

第1年实施

- ⊙ *Develop innovative approaches to* optimise energy generation from hydropower
- ⊙ 开发新的方法，以优化水力发电
- ⊙ *Tap hidden energy potentials* for existing hydropower schemes and enhance water resource efficiency
- ⊙ 挖掘现有水电项目的能源潜力并提高水资源的效率
- ⊙ *Develop innovative green hydropower approaches for planned projects*
- ⊙ 为计划项目制定创新绿色水电方法
- ⊙ Establish common understanding and technical basis towards development of *green hydropower standards/guidelines to limit environmental impacts*
- ⊙ 达成建立绿色水电标准/指导的共识和技术基础，以限制环境影响
- ⊙ Address contribution to *climate change adaptation*
- ⊙ 致力于适应气候变化
- ⊙ *Select demonstration sites/basins* to test standard and guidelines
- ⊙ 选择示范点/基地，以测试标准和指导
- ⊙ *Stakeholder analysis* taking into account governance, research and business sector考
- ⊙ 考虑治理、研究和商业部门的利益相关者分析

Key Outcome 主要成果:

Common understanding on implementation activities and guidelines

达成实施活动和指导的共识

Small Hydropower Co-Lead Overview: Cooperation Activities 小水电联合活动概况

Implementation Year 2

第2年实施

- ⊙ Implement standards and guidelines in demonstration sites/basins (EU and China)
- ⊙ 在示范点和基地（欧盟和中国）实施标准和指导
- ⊙ Jointly develop guidelines and standards towards policy coherence taking into account permitting mechanisms
- ⊙ 联合制定指导和标准，实现政策连贯性，以便允许使用机制
- ⊙ Promote and apply research innovation and business opportunities
- ⊙ 推广并利用研究创新和商业机遇
- ⊙ Full stakeholder involvement
- ⊙ 利益相关者充分参与

Key Outcome

主要成果:

Successful implementation: Improved innovative approaches & hydropower technology for energy optimisation towards generation & resource efficiency as well as impact limitation

成功实施：改善创新方法和水电技术，以优化能源生产、提高资源效率并限制影响



Small Hydropower Co-Lead Overview Cooperation Activities 小水电联合活动概况

Implementation Year 3

第3年实施

- ⊙ Policy integration, improvement and dialogue (EU – China) based on developed standards
- ⊙ 基于制定标准的政策一体化、提高和对话（中欧）
- ⊙ Development of business models
- ⊙ 开发商业模式

Key Outcome:

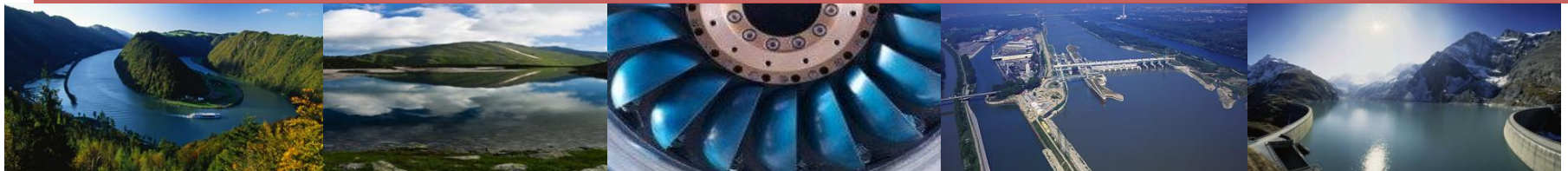
主要成果

Integration of gained knowledge and standards into coherent policy and linked dialogue (China-EU) towards governance efficiency

将获得知识和标准纳入到统一的政策和链接对话（中欧）以提高治理效率

Development of innovative business models on the elaborated hydropower, water and energy technology innovations

开发有关水电、水和能源技术创新的创新商业模式



Small Hydropower Co-Lead Partners

小水电联合活动合作伙伴

Partners of Co-Lead

- ◎ Chinese MWR
- ◎ International Centre for Small Hydropower
- ◎ Chinese Ministry of Science & Technology
- ◎ Experts from provinces / local level
- ◎ Hydropower operators and developers
- ◎ AT Ministry for Environment & Water Management
- ◎ AT Association for Small Hydropower
- ◎ EU Small Hydropower Association

联合活动的参与方

- 中国水利部
- 国际小水电中心
- 中国科学技术部
- 来自于省/地区的专家
- 水电运营商和开发商
- 奥地利环境和水资源管理部
- 奥地利小水电协会
- 欧盟小水电协会

Further interested partners are still welcome to join!

感兴趣的合作机构仍然可以参与

Co-Lead Partnership

Small Hydropower Next Steps

小水电联合活动的后续步骤

- ⊙ Perform full alignment of the Co-Lead Work Programme to
- ⊙ 执行完全一致的联合活动方案：
 - ⊙ contribute to the overarching CEWP aims
 - ⊙ 有助于实现CEWP总体目标
 - ⊙ contribute to the overarching aims of WA Water and Energy Security
 - ⊙ 有助于实现WA水和能源安全总体目标
 - ⊙ fit the needs and requirements of the EU Partnership Instrument
 - ⊙ 满足欧盟伙伴工具的要求
- ⊙ Detail the Co-Lead Work Programme over 3 years instead of 1
- ⊙ 用详细的3年联合活动方案取代1年计划
 - ⊙ Time period: 2015 – 2017
 - ⊙ 时间：2015-2017年
- ⊙ Invest the highest ambition to involve best partners to ensure
- ⊙ 投资最佳合作伙伴，以确保有关水和能源工作领域的政策对话、研究和商业创新
 - ⊙ Policy dialogue, research and business innovation regarding the Work Area on Water and Energy
 - ⊙ 有关水和能源工作领域的政策对话、研究和商业创新



Thank You!

谢谢!

Contact Persons 联系人

China: 中国:

Mr. Heng Liu – hliu@china.com

Ms Linda Hu - xbhu@ischp.org

Austria: 奥地利

Ms Birgit Vogel - bv@rbm-solutions.com

Mr. Andreas Tschulik –
andreas.tschulik@lebensministerium.at

