International Organization for Standardization
Organisation internationale de normalisation
Международная организация по стандартизации

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Ref. ISO/TMB IWA33

2020-07-17

Invitation to an international workshop on:

Technical Guidelines for the Development of Small Hydropower Plants - Part 3: Design guidelines (IWA33-3)

Dear ISO Members,

Following approval by the Technical Management Board of a proposal from Austrian Standards International (ASI) and the Standardization Administration of China (SAC), IWA 33-1:2019 Technical guidelines for the development of small hydropower plants — Part 1: Vocabulary, and IWA 33-2:2019 Technical guidelines for the development of small hydropower plants — Part 2: Site selection planning have been published.

We are now pleased to invite you to a further workshop to develop IWA 33-3 *Technical Guidelines for the Development of Small Hydropower Plants - Part 3: Design guidelines*. Please find enclosed the draft schedule and registration information for the online virtual workshop to develop this third part.

Workshop dates: 19-23 October 2020

Location: Online virtual workshop

We ask that you register for the workshop not later than **15 October 2020** using the form included in the attached invitation.

We would be grateful if you could publicize this event in your country.

Yours sincerely,

Antoine Morin
Secretary to the Technical Management Board

Encl.:
- Invitation, including registration form
- Background information on the proposal from ASI/SAC
- Schedule for the workshop

Invitation to Participate in ISO International Workshop Agreement IWA on

Technical Guidelines for the Development of Small Hydropower Plants —Part 3: Design guidelines (IWA33-3)

October 19 -23 2020

Online virtual workshop

Standardization Administration of China (SAC)

Austrian Standards International (ASI)

1. Background

The Austrian Standards International – Standardization and Innovation (ASI), and the Standardization Administration of China (SAC) submitted a joint proposal to ISO Central Secretariat for the development of an International Workshop Agreement (IWA) detailing the Technical Guidelines for the Development of Small Hydropower (SHP) Plants specifically the *General Terms and Definitions and Design Guidelines.*

The Technical Management Board resolution 17/2019 *which was adopted at the 74th meeting, Kyoto (Japan), 27-28 February 2019, approved* the revised proposal for an IWA on 'Small hydropower plants'.

On June 25th and 26th 2019, the ISO IWA33 Workshop on "Technical Guidelines for the Development of Small Hydropower Plants: Terms and Definitions; and Design" was held in Hangzhou, China. On 10th December 2019, the IWA 33-1 for Vocabulary and IWA 33-2 for Site selection planning have been published.

In consultation with ISO TMB, IWA 33-3 is to continue IWA 33 for the rest of parts of design.

This IWA aims to:

- Provide a platform to facilitate the standardization of the general terms and definitions for SHP Plant development.
- Allow for the efficient and effective design guidelines of SHP Plants worldwide based on best practices gathered from a wide variety of countries;

The IWA is intended for use by developed, developing and least developed countries alike. The General Terms and Definitions specify the professional technical terms and definitions commonly used for small hydropower stations. The Design Guidelines cover small hydropower up to 30 MW and provide guideline for basic requirements; methodology and workflow in terms of site selection, hydrology, geology, hydraulics, electromechanical equipment selection, construction, economic evaluation, and social & environmental assessment, etc, these ultimate goals are to find the best design solutions.

The Standardization Administration of China (SAC), as the secretariat of this IWA, is pleased to invite all interested participants to attend the workshop meeting as per the below information.

2. Workshop Overview

2.1 Dates & Format of the workshop

The IWA33-3 workshop will be organized by virtual meetings online to discuss and update the Design guideline document. The virtual meetings are scheduled for 19 -23 October 2020. Additional meetings will be organized if necessary, till consensus is reached among the participants. Considering the time lag, it's planned to have workshop at 13:00(CEST), which is 7:00 in Eastern USA/ Canada, 21:00 in Sydney and 19:00 in Beijing. 4 meetings are planned tentatively. Each virtual meeting will be around 2 hours. The exact timing is subject to changes if necessary.

After registration, the participants could download the IWA33-3 Design guideline document from the dedicated web site and could upload their revision and comment on the document to the web site.

2.2 IWA Workshop Schedule

S/No.	ITEM
1	**Opening of the meeting**
2	**Round of presentation**
3	**Adoption of the agenda**
4	**Discussion on draft of IWA 33-3 and comments received**
5	**Recommendations**
6	**Work-plan and next steps**
7	**Any other business**
8	**Closure**

2.3 Costs

Zoom meetings will be applied as the virtual workshop platform. Guidance will be provided to facilitate the participants to attend the meeting.

3. Workshop Registration *(until 15 October 2020)*

3.1 How to Register

The workshop participation will be open to the registered participants only. Participants need to send the Registration Form attached below to email address ynzhang@icshp.org or zhangmm@sac.gov.cn no later than 15 October 2020.

Registrants for ISO IWA workshops are not required to be appointed by ISO national member body, but it is advised that they notify their participation to its ISO national member body before they register.

An official list of participants will be made available to attendants.

3.2 IWA Workshop Host

The IWA workshop on Small Hydropower Plants will be hosted by the Standardization Administration of China (SAC) and Austrian Standards International – Standardization and Innovation (ASI), in association with the International Center on Small Hydropower (ICSHP).

Standardization Administration of China (SAC)
No. 9 Madian Donglu, Haidian District
Beijing 100088
China
Tel. +86 10 82261017 / Fax. +86 10 82260660
http://www.sac.gov.cn/sacen/

Austrian Standards International – Standardization and Innovation (ASI)
Heinestrasse 38
A-1020 Wien
Austria

International Center on Small Hydropower
No 136 Nanshan Road,
Hangzhou
P. R. China
Tel: +86 571 87132793 /Fax. +86 57187023353
http: //www.icshp.org

3.3 IWA Workshop Chair

Prof. CHENG Xialei
Advisor to Director General, ICSHP
Tel. +86 13805787158 / E-mail xlcheng@icshp.org

REGISTRATION FORM

Complete this form and return by email to:

Ms. Mily Zhang
ynzhang@icshp.org

With cc on:
zhangmm@sac.gov.cn

by October 15, 2020

Please make copies of this page if more than one additional participant will attend.

Registration Form	
Name:	
Organization:	**Name:** **Type:** **Industry** ☐ **Government** ☐ **Consumer** ☐ **Consultant** ☐ **Academia** ☐ **Standards Body** ☐ **Other:** ☐ **……**
Position/Title:	
Address:	
Email:	
Mobile:	
Additional Information:	

4. Approved Proposal of the ISO IWA

Approved version by ISO TMB as of 27-28 February 2019

Technical Guidelines for the Development of Small Hydropower-*General Terms and Definitions; and Design*

Submitted by SAC and ASI

4.1 Proposer

The following Organization/s is proposing jointly the development of this ISO International Workshop Agreement:

Standardization Administration of China (SAC)
No. 9 Madian Donglu, Haidian District
Beijing 100088
China

Austrian Standards International – Standardization and Innovation (ASI)
Heinestrasse 38
A-1020 Wien
Austria

4.2 Title of the proposed Deliverable

International Workshop Agreement (IWA) detailing the Technical Guidelines for the Development of Small Hydropower (SHP) Plants specifically the *General Terms and Definitions and Design Guidelines.*

4.3 Purpose and Justification of the proposal

This IWA aims to:

- Provide a platform to facilitate the standardization of the general terms and definitions for SHP Plant development.
- Allow for the efficient and effective design guidelines of SHP Plants worldwide based on best practices gathered from a wide variety of countries;

With the need to mitigate the effects of climate change, it is of the utmost importance to facilitate the growth in low-carbon renewable energy technologies. Promotion of technologies that are most effective in various environments will ensure the efficient utilization of our resources. For example, in regions containing rivers with adequate flow and head, there is potential to implement SHP technologies that could allow for access to electrification with

limited financial, technological and environmental interventions. The commissioning of SHP plants has experienced a steep climb, boasting in increase in installed capacity from an estimated 40 GW globally in 2002 to 79 GW in 2017. For the remaining at least 140 GW of untapped global potential, it is essential to ensure the most systematic approaches in the development of these SHP plants for the most sustainable results.

There currently exist various national SHP strategies and guidelines; however none of these provide a solution to assist in the facilitation of SHP development on a global scale. Bridging this gap would prove to be beneficial in terms of efficient electricity generation supporting in national socioeconomic development whereby assisting in poverty alleviation while promoting environmental awareness.

The proposed guidelines will address the current limitations of the regulations applied to the terms and definitions and design guidelines of small-scale hydroelectric power generating plants by applying the expertise and best practices that exist across the globe. It is intended for countries to utilize these agreed upon guidelines to augment their current policy and technological eco-systems. For countries that have limited institutional and technical capacity, standardized terms and definitions as well as design Guidelines, would allow for the increase in their knowledge infrastructure in developing SHP plants, whereby attracting more foreign investment onto projects, encouraging favorable policies and subsequently assisting in economic development at a national level. On the back of an IWA certified common terms and definitions, there is also potential to unlock more global interactions and trade possibilities due to the common language relating to SHP. They will be used to train developers, engineers and decision-makers and promote sustainable and green development, especially in developing countries. The standards would be valuable for all countries, but would allow for the transfer of best practices between countries that do not have much technical know-how available such as some COMESA countries.

4.4 Scope

This IWA details the General Terms and Definitions and Design Guidelines for the development of SHP Plants. The IWA is intended for use by developed, developing and least developed countries alike. The General Terms and Definitions specify the professional technical terms and definitions commonly used for small hydropower stations. The Design Guidelines cover small hydropower up to 30MW and provide guideline for basic requirements, methodology and workflow in terms of site selection, hydrology, geology, hydraulics, Electromechanical equipment selection, construction, economic evaluation, and social & environmental assessment etc., these ultimate goals are to find the best design solutions.

4.5 Relation to Existing ISO/IEC work

ISO and IEC have been leading the standardization processes as it relates to various renewable energy (RE) technology implementations. Currently there exist Technical Committees for RE sources such as Solar, Hydrogen and Geothermal in ISO; ISO and IEC also have a joint working group as it relates to Wind Turbines; IEC has established TC 114(Marine Energy) and TC 4(Hydraulic Turbine). However, the work on SHP is still very limited, apart from the equipment. This IWA would aid in the process of establishing a Technical Committee for SHP and mainstream the subject into the formal international standardization track.

4.5.1 Relevant documents

There currently exist no ISO standards in relation to SHP, however there are multiple Technical Committees allocated to Clean Energy related topics. IEC has established IEC/TC4 (Hydraulic Turbines) and IEC/TC 114(Marine Energy) such as:

- ISO TC 28/SC 7 (Liquid Biofuels)
- ISO TC 180 (Solar Energy)
    - 6 ISO Standards
- ISO/TC 197 (Hydrogen technologies)
    - 17 ISO Standards
- ISO/TC 238 (Solid Biofuels)
    - 32 ISO Standards
- ISO/TC 301 (Energy management and energy savings)
    - 15 ISO Standards
    - IEC/TC 4 (Hydraulic Turbines)
    - IEC/TC 114(Marine Energy- wave, tidal and other water current converters)

ISO has been working on successfully standardizing various forms of renewable energy methodologies, and IEC has standardized the technical aspects of Hydropower generation equipments listed above, but there is a gap in any ISO standards addressing the generalities.
It's observed that IEC/TC4 has established standard for the hydraulic turbine and auxiliary equipment. While the proposed IWA emphasis on the selection of the scope of application for turbine and auxiliary equipment. Therefore, in the IWA development process, coordination with the IEC standard will be ensured, and the selected small hydroelectric equipment will fully meet the requirements of the IEC standard in terms of technical parameters such as product performance. In terms of Terms and Definitions, the nomenclature for hydroelectric power plant and definitions given in IEC /TC4 will be fully acknowledged and the source of citations will be noted in the IWA document.

4.6 Interested Stakeholders

The following Standards bodies and Organizations have indicated an interest in partaking in the IWA process:

1. Standardization Administration of China (SAC)

2. Austrian Standards International (ASI)
3. Zambia Bureau of Standards (ZABS)
4. Standards Organization of Nigeria (SON)
5. Common Market for Eastern & Southern Africa (COMESA)
6. United Nations Industrial Development Organization (UNIDO)
7. International Centre for Small Hydropower (ICHSP)
8. International Network for Small Hydropower (INSHP)

Further stakeholders are encouraged to attend the IWA. The following would be preferred candidates:

1. Other National Standards Bodies
2. Standards Developing Organizations and Regional Standards Organizations
3. Entities Working with SHP
4. Academic and research bodies
5. Liaison organizations of ISO are also invited to contribute
6. Government Bodies willing to partake
7. Non-Governmental Organizations (NGO)
8. Industry and Commerce
9. Consumers

4.7 Secretariat and project leader

Austria's member body to ISO, Austrian Standards International, ASI, and People's Republic of China's member body to ISO, Standardization Administration of China, SAC, are jointly submitting this IWA proposal.

The Standardization Administration of China, SAC, is willing to act as the Secretariat for this IWA.

The Standardization Administration of China, SAC, would also like to nominate Prof. CHENG Xialei as Chair. Prof. CHENG Xialei is the DG of the International Centre for Small Hydropower, ICSHP, and has been working in the field of small hydropower for more than 30 years, renowned as an expert for small hydropower; successfully led the compiling of many national small hydropower technology standards, and fluent in communication in English.

4.8 Plan for development of IWA

Given an approval from TMB the following steps form the tentative plan to develop the IWA:

1) Introductory advisory WebEx meeting/s

Depending on the need and interest, one or several introductory WebEx meetings will be organized in order to inform and discuss ahead of the workshop meeting.

2) Workshop meeting/s

The meeting/s will aim at building consensus for the text of an IWA. The hope is that this can be achieved through two meetings. However, it might be deemed necessary to hold further meetings. A draft discussion text will be sent out ahead of the first meeting.

The meetings will be open to all stakeholders nominated by their respective NSB or, alternatively, by an international organization that would fulfill the criteria of an international liaison set out in the ISO Directives for TCs, SCs or WGs. An invitation will be sent to all ISO Member states. There will be no participation fees for developing countries in this IWA but participants will be expected to cover their own expenses.

The workshop will be held in Hangzhou, China and Vienna, Austria if a second workshop is needed; the workshop language will be English. The organizer will aim to provide a WebEx connection, however, sound quality cannot be guaranteed. If additional meetings are deemed necessary, SAC and/or ASI would offer to host any further meetings.

3) Publication and distribution

The final product of the workshop will be sent to ISO for publication. ISO members may market and promote the document through their regular channels. ISO will hold the copyright to the document.

4) Follow-up WebEx-meetings

After the IWA has been published, follow-up WebEx meetings can be organized to discuss the promotion of the deliverable. If demanded, information WebEx meetings can also be held ahead of the publication.

Table1: Timetable

1) Submission of proposal	2) TMB approval	3) Intro WebEx meeting/s	4) Workshop meeting/s	5) Publication and distribution	6) Follow-up WebEx
		Within 1 month after TMB approval	The first meeting is to be held around 3 months after TMB approval	One month after document is sent to ISO/CS	After publication, timing will be determined at a later stage

Annex A

Draft Outline of IWA

Introduction

1. **SCOPE**

This IWA details the General Terms and Definitions and Design Guidelines for the development of SHP Plants. The IWA is intended for use by developed, developing and least developed countries alike. The General Terms and Definitions specify the professional technical terms and definitions commonly used for small hydropower stations. The Design Guidelines cover small hydropower up to 30MW and provide guideline for basic requirements, methodology and workflow in terms of site selection, hydrology, geology, hydraulics, electromechanical equipment selection, construction, economic evaluation, and social & environmental assessment etc, these ultimate goals are to find the best design solutions.

2. **NORMATIVE REFERENCES**
3. **TERMS AND DEFINITIONS**
    a. References to definitions of TG and those of relevant standards.
4. **HOW TO USE TECHNICAL GUIDELINES**
    a. This section will introduce International Workshop Agreement (IWA) detailing the Technical Guidelines for the Developments of SHP Plants specifically the General Terms and Definitions and Design Guidelines