



# THINK BIG, START SMALL, SCALE UP

## A Road Map to support country-level implementation of Water Safety Plans

### Introduction

As part of ongoing efforts to improve drinking-water safety and health, many countries have requested guidance on how to introduce and scale up the implementation of Water Safety Plans (WSPs). There is no one model or way to proceed with WSP implementation and scale up. However, based on experience, a series of steps has been identified that describe how this may be done.

This WSP “Road Map” is directed towards governments and regulatory entities tasked with revising or developing new drinking-water quality policies, programmes and regulations. It may also be useful to non-government organizations, funding agencies and other organizations interested in improving their existing programmes and practices.

Steps have been presented in a simplified sequence for clarity. Depending on the local context and the agency leading implementation, these need not necessarily be pursued in order and certain steps may be less important or unnecessary.

#### **WSPs can be introduced into a country by various means, including through:**

- A decision by governments to encourage or require WSP implementation by water suppliers as a means to improve public health;
- Pro-active implementation of WSPs by water suppliers to improve performance, drinking-water quality, compliance or due diligence;
- Donor-driven requirements for project administrators to comply with international good practice; and/or
- Promotion or support from professional and industry associations to encourage implementation at the individual water supplier and sector levels.

#### **WSPs are most effectively implemented through the concerted actions of all stakeholders involved in the supply of drinking-water. WHO Guidelines recommend that:**

- Local and state governments establish appropriate policies, regulations and tools to encourage and support WSP implementation;
- Organizations or companies responsible for supplying drinking-water implement WSPs; and
- Institutions or regulatory agencies responsible for drinking-water quality surveillance support and audit WSPs.

The WHO Guidelines for Drinking-water Quality recommend WSPs as the most effective means of consistently ensuring the safety of a drinking-water supply. WSPs require a risk assessment encompassing all steps in water supply from catchment to consumer, followed by implementation and monitoring of risk management control measures. WSPs should be implemented within a public health context, responding to clear health-based targets and quality-checked through independent surveillance.

## 1. Understand and appreciate the benefits of a WSP approach

**Milestone:** Representatives from key stakeholders in the public health and water sector are familiar with, and advocating for, the WSP approach.

**Outcome:** Initial level of interest and understanding for WSPs by decision makers is attained.

### Learn about WSPs

Water and public health sector representatives may become familiar with the WSP approach and its benefits by referring to the WHO Guidelines for Drinking-water Quality<sup>1</sup>, which recommend WSPs as the preferred approach to drinking-water quality management. Further information, including how to implement a WSP, can be found in technical guidance documents, including the WSP Manual<sup>2</sup>. Other mechanisms for finding out more about the WSP approach include attending regional/international conferences or workshops and by organizing a national event facilitated by WHO, IWA or other experts.

In order to initiate interest in WSPs, it is important to communicate the benefits of the WSP approach to relevant national stakeholders, including the overall benefit of improved water quality and therefore, better protection of public health. Other benefits include, for example, a better understanding of the water supply system, operational efficiency gains, performance improvements, improved stakeholder relationships and targeted use of financial resources. Further information can be found in the WSP Manual and on WSPortal<sup>7</sup>. Information can also be sought at regional/international conferences and workshops.

### Examples of networks supporting WSPs

- IWA Bonn Network<sup>3</sup>
- Latin American and Caribbean WSP Network<sup>4</sup>
- WHO International Network of Drinking-water Regulators<sup>5</sup>
- WHO International Small Community Water Supply Management Network<sup>6</sup>

### Create informal alliances at country level

It is important to identify key individuals and institutions to support and share the responsibility for promoting WSPs and gain their buy-in. These may include senior representatives from the government departments responsible for public health (for example, Ministry of Health), environmental health and drinking-water, as well as leaders from water supply organizations (for example, Chief Executive Officers of utilities), representatives of national water supply associations and representatives of community or local governments. These loose alliances should eventually evolve to a formalized national steering committee. While the nature of the regulatory framework may vary from one country to another, it is often advisable that the agency responsible for public health or environmental health play a leadership role.

### Agree to explore WSP approach

Following this, the government and other stakeholders may agree on exploring WSPs as the preferred approach to sustainably manage drinking-water safety in the country. It might be useful to consult with

1 [http://www.who.int/water\\_sanitation\\_health/dwq/gdwq3rev/en/index.html](http://www.who.int/water_sanitation_health/dwq/gdwq3rev/en/index.html)

2 [http://www.who.int/water\\_sanitation\\_health/publication\\_9789241562638/en/index.html](http://www.who.int/water_sanitation_health/publication_9789241562638/en/index.html)

3 <http://www.iwa-bonn-network.org>

4 [http://www.cepis.ops-oms.org/bvsacg/red\\_lac\\_psa/redlacpsaeng.html](http://www.cepis.ops-oms.org/bvsacg/red_lac_psa/redlacpsaeng.html)

5 Note that participation is limited to representatives of institutions responsible for regulating drinking-water production and quality and independent surveillance. Contact [RegNet@who.int](mailto:RegNet@who.int).

6 [http://www.who.int/water\\_sanitation\\_health/dwq/scwsm\\_network/en/index.html](http://www.who.int/water_sanitation_health/dwq/scwsm_network/en/index.html)

7 <http://www.wsportal.org>

experts from other countries who have had experience in WSP implementation to better inform on steps to be taken to introduce WSPs.

## 2. Establish preliminary WSP vision

**Milestone:** *Establishment of a national WSP steering committee and an agreed country vision for improving the management of drinking-water quality through the use of WSPs.*

**Outcome:** *Attainment of initial government commitment to actively promote and pursue WSP implementation.*

### Establish a national steering committee

The national steering committee's roles include promoting awareness of and advocating for WSP implementation, developing the national WSP vision and overseeing and providing guidance on its implementation. This committee should consist of senior government decision makers from the health and the water sector, including those with responsibility for water supply, water quality management and the regulation and enforcement of drinking-water laws and standards. The steering committee requires strong leadership, adequate resources, regular meetings and communications among the members and political support. If possible, it should be a formally endorsed committee (e.g. with a terms of reference).

### Initiate a WSP vision

Based on an evaluation of existing water quality standards, regulations and policies, the status of drinking-water quality management practices and the perceived benefits of WSPs, the steering committee should coordinate the development of an initial WSP vision. This may describe an ultimate goal of having all water suppliers develop and implement WSPs or it may simply be to require and encourage the adoption of preventive risk management approaches.

## Case study: Process of introducing WSPs in the Sultanate of Oman

The first WSP in Oman is currently being developed in Muscat under the leadership of the Public Authority for Electricity and Water (PAEW). The Ministry of Health (MoH) initiated the introduction of WSPs in the country, with a request to the WHO Regional Centre for Environmental Health Activities (CEHA) for policy advice and technical assistance in 2008. This resulted in the development of a first national vision to require all water suppliers in Oman to have WSPs in place and the establishment of a steering committee which has initiated and now oversees the development and implementation of a WSP demonstration project in Muscat. This steering committee is comprised of senior representatives of the PAEW, the MoH and the Ministry of Regional Municipality and Water Resources.

To support development of the WSP demonstration project, an external consultant was engaged at the end of 2008 and details of the pilot demonstration project were established, including the location of the pilot, its scope, milestones and time frames. In May 2009, the consultant provided initial training on the WSP process to the technical WSP team that is collectively responsible for developing the WSP. Since then, the system description and hazard analysis have been finalized and documented. A regional meeting was then convened on WSPs in Amman, Jordan, at which the steering committee shared the approach taken and the initial lessons learned in Oman.

Most recently, additional training on the next steps of the WSP approach has been provided by the consultant. Benefits have already been seen as a result of WSP development, including improved stakeholder relationships and a better understanding of the risks affecting the water supply. In fact, the steering committee already plans to implement WSPs in other regions of Oman once the demonstration project is finished. To support this process and the demonstration project, the MoH has restructured its water and sanitation section.

Additionally, to promote and achieve the WSP vision, stakeholders from both government and non-government institutions should be identified and contacted. At this stage, it will be important to collaborate with those active in the country that have already implemented or may be interested in engaging in WSPs.

### 3. Attain practical WSP experience

**Milestone:** WSP demonstration projects implemented with one or more water suppliers in cooperation with the regulatory agency and potentially other stakeholders.

**Outcome:** Practical experience with WSP development and implementation is gained in a local context.

#### Implement WSP demonstration project

The national steering committee will need to develop and implement a WSP demonstration project (or projects) in cooperation with one or more water suppliers in order to proceed with the WSP vision. The purposes of the pilot are to demonstrate that a WSP can be successfully implemented under national circumstances, provide a local model and create a core team of national WSP experts. Therefore, when choosing the water supply for the demonstration project, it is important to consider the supplier's interest and enthusiasm to commit to the WSP approach including support from senior management. In developing the demonstration WSP, it is beneficial to focus on attaining 'quick wins', where the implementation of a WSP has the potential to improve a specific issue related to drinking-water quality. If external technical support is required, the services of a local or international expert can be sought, including from WHO, IWA, certain universities, or other organizations involved in WSP support.

#### Demonstration project steps

##### Phase 1: Planning

- Define agencies and participants and ensure their engagement with the steering committee.
- Select the water supplies where the demonstration will be implemented.
- Select the members of the WSP team responsible to develop and implement the WSP. The team needs to include members of the water supplier but may also include external stakeholders (e.g. regulator, catchment authority). A team leader should also be identified to drive the project and ensure focus.
- Design a realistic and achievable plan of action to implement the WSP, including milestones, time-frames, roles and responsibilities of the individuals on the WSP team, budget and reporting mechanisms to the steering committee.
- Train the WSP team on the process of WSPs. If needed, an external expert(s) could be used to provide training and technical advice throughout the demonstration project.

##### Phase 2: Implementation

- The WSP team develops and implements the WSP according to the plan of action, under the oversight of the steering committee. (See the WSP Manual for guidance.)
- Convene regular meetings between the steering committee and the WSP team to report progress of the completed steps of the WSP.
- Provide further training as needed of the WSP team and operational staff on the next stages of WSP development and modify the plan of action if necessary.
- Complete the first iteration of the WSP.

##### Phase 3: Finalization

- Organize an external review of the WSP and revise based on feedback.
- The steering committee and the WSP team evaluate the WSP outcomes.
- Communicate and share the outcomes of the WSP demonstration project with national stakeholders and the international community.

The national steering committee should have an oversight role in the development and implementation of the WSP demonstration. It is also responsible for ensuring that the WSP team has sufficient resources for successful implementation of the demonstration project.

#### Evaluate WSP demonstration project

The pilot should be evaluated by the WSP team and the steering committee against the following criteria to inform the national vision and strategy for scaling up:

- Feasibility in national and local context under existing resources;
- Immediate and expected longer-term added value for consumers, water suppliers, regulators and others concerned about water quality and health;
- Resources needed (including personnel, knowledge, supporting materials and tools, time, money and equipment);
- Challenges faced during implementation and how they were addressed;
- Differences between current practices and those required for WSP implementation in operation and management; and
- Other lessons learned.

## 4. Establish national strategy to scale up WSP implementation

**Milestone:** *Convening of a multi-stakeholder consultation process to review and refine the original vision and develop a detailed strategy for wide-scale WSP implementation.*

**Outcome:** *National strategy for scaling up WSP implementation developed and agreed to by key stakeholders.*

#### Develop the national strategy for WSP scale up

Based on experience gained from the demonstration project, the steering committee should re-evaluate the initial WSP vision and develop a detailed strategy to achieve the vision. This will require sufficient government support for WSP scale up and the confirmation of resources (including mobilization of external funding, if required) for the steering committee to carry out this work. Key points to consider, or include in the strategy are the following:

- A review of existing water quality standards, regulations and policies to evaluate the strengths and weaknesses of existing frameworks to see how the WSP approach can complement and improve them. This evaluation may have been initiated when the initial WSP vision was established and the information gathered at that time should be utilized. While many countries' regulations require monitoring of the drinking-water supplied to consumers against water quality standards, the comprehensive risk assessment and risk management approach implicit in WSPs to most effectively protect public health is often lacking.
- A review of roles, responsibilities and capabilities of relevant institutions, including the effectiveness of current working structures. Furthermore, the institutional roles and responsibilities that are needed for successful and sustainable adoption of the WSP approach will need to be identified. Further details of the latter activity is described in section 6.
- A description of WSP policy and regulatory objectives and rationale for them. The steering committee should understand the implications of the policy and regulatory objectives that are being considered. For





Regional WSP awareness-raising meeting, Jordan.

example, countries should expect that the drinking-water regulator would need to gain the capacity to assess the WSPs if WSP implementation becomes a regulatory requirement. At the same time, water suppliers themselves may need support, and possibly incentives, before committing to the WSP approach. On the other hand, if WSP implementation is not made a regulatory requirement, some water suppliers may be reluctant to adopt the WSP approach. Implementation targets, with accompanying milestones and anticipated target dates to track progress should be identified.

- Identification of potential national and international WSP stakeholders and their roles for achieving the strategy. It is important to map and engage with a wide group of stakeholders, considering all parties involved in the water, sanitation and public health fields. This may include catchment management authorities, donor agencies, consumer associations and training institutes.
- A description of mechanisms and policy instruments to support WSP implementation. This should include advocacy and capacity building activities targeted at water suppliers, regulators and other stakeholders. Further details of these supporting activities are described in sections 5 and 6.

#### **Promote multi-stakeholder buy-in**

A workshop should be organized by the steering committee and the water supplier involved in the WSP demonstration project to obtain feedback and seek support of the national strategy from a broad group of stakeholders who were not involved in previous WSP initiatives. During this workshop, the process and outcomes of the demonstration project should be presented with a focus on highlighting timeframes, benefits, challenges and opportunities for widespread WSP implementation. Strong commitment should be sought from all stakeholders to work together in scaling up WSP implementation.

## 5. Establish mechanisms for ongoing support of WSPs

**Milestone:** Long-term programmes established to build capacity of water suppliers, surveillance agencies and other stakeholders.

**Outcome:** Enabling environment created, facilitating WSP implementation.

### Continue to advocate for WSPs

To support widespread implementation of WSPs, advocacy efforts will need to be conducted at a larger scale. Specific materials may need to be developed and activities should be organized to increase awareness amongst all stakeholders (see section 4). This includes the organizations that could fund the improvement programmes (e.g. infrastructure, equipment, training etc.) that will be identified through the WSP process. National “WSP champions” among different stakeholder groups should be identified and supported in their efforts to promote WSPs. Furthermore, the regulator and those involved in the WSP demonstration project should promote the WSP approach, particularly at the water supply level.

### Scale up WSP training

WSP training not only includes practical instruction on how to do a WSP, but also targeted training on particular aspects of drinking-water quality management issues. It also includes training for regulators and/or other third parties on how to review and audit WSPs. Local expertise gained through the WSP demonstration projects should be disseminated, including through peer-to-peer sharing of experiences (see below) and also through knowledge-sharing facilitated by, for example, the national regulatory agency. Capacitating national and regional water supply associations and training providers in the water and public health sector to deliver WSP training should also be considered. Certified training and education may be introduced as programmes progressively improve. Finally, incorporation of WSPs into university curricula and continuing professional education programmes should also be explored and encouraged.

### Establish utility-utility partnerships

Partnerships can strengthen peer-to-peer support amongst water operators. A supplier knowledgeable in WSPs could provide a mentoring role to those suppliers who are initiating WSP development while partnerships between two supplies at the same level would facilitate knowledge exchange. Partnerships could be formed between the WSP team from the demonstration project and other suppliers within the country or between an in-country supply and a WSP experienced supply from abroad. Partnerships could also be formed between supplies undergoing WSP implementation within a geographic region, to work together on certain aspects of the WSP, for example, in identifying, and assessing the risks and in developing mitigation measures. Such opportunities can be facilitated through the Water Operators Partnership (WOPs) initiative<sup>8</sup>.

### Develop and disseminate tools and resources

A number of international resources have been developed to guide WSP implementation including the WSP Manual and WSPortal. Countries may also wish to develop their own materials, such as guidance notes or code of practices, taking into account local circumstances, or modify and translate existing resources. When developing tailored material, standardization of format will be important to ensure incorporation of key

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8 <http://www.unhabitat.org/content.asp?cid=5907&catid=568&typeid=24&subMenuId=0>.

WSP steps, but there should be enough flexibility to ensure that the site conditions and the risks, which may vary from one place to another, are adequately addressed. National or regional resource centres could also be empowered to provide technical advice and ongoing support in developing and implementing WSPs. Knowledge gaps should additionally be identified and a prioritized research agenda could be developed and coordinated between universities and research centres.

## 6. Establish policy and regulatory instruments to support WSP implementation

**Milestone:** *Formal inclusion of the WSP approach in appropriate national or sub-national policies and/or regulations.*

**Outcome:** *Functioning institutional framework and legal and financial instruments established, incentivizing and supporting WSP implementation.*

### Empower institutions

WSP implementation requires a coherent and robust institutional framework, with clear delineation and mutual understanding of roles and responsibilities. Institutions must be empowered to undertake their responsibilities, meaning allocation of appropriate personnel (including knowledge capabilities), technical and financial resources. This includes enabling relevant government authorities to understand and play a “new role” in supporting and auditing WSPs.

### Issue legislative and regulatory instruments

Including WSP implementation as a legal requirement can provide an impetus for the widespread implementation of WSPs and provide a robust framework for effectively safeguarding drinking-water quality in the long-term. However, legal instruments should only be used where mechanisms for ongoing support of WSP implementation are in place and therefore water suppliers have the capacity to fulfil their legal obligations and governments have the ability to enforce them. The incremental inclusion of WSPs in legal frameworks is advised. This may commence with a formal advisory note administered by the regulatory authority strongly encouraging WSP implementation. Other options include introducing legislations with clearly defined timelines for WSP implementation for different supply sizes and legislations that require water suppliers to have a WSP, with an incremental improvement schedule and related timeframe and resources.

In developing WSP policies and regulations at the national or sub-national level, special attention should be given to small community managed water supplies as these supplies generally present a greater public health risk relative to large water supplies. Also, small community supplies often need additional time and resources to implement WSPs.

### Secure financial instruments

The implementation of WSPs can incur small costs, mainly to finance training, external consultations or additional staff. Furthermore, implementation of a WSP will identify short- and long-term investment needs to improve drinking-water quality. It is therefore important that finance is made available to support the implementation of WSPs and also the improvements identified through WSP implementation. Finance may be provided by the government, donor agencies, international finance institutes and/or through private investments. These organizations may want to only support the improvements identified through the WSP process.



## 7. Implement WSPs and verify their effectiveness

**Milestone:** Water suppliers are implementing WSPs which are regularly subjected to audits and compliance monitoring.

**Outcome:** Risk management practices are implemented with confirmation that WSPs are appropriately developed.

### Continue implementing WSPs

Water suppliers will need guidance and support from time to time as they develop, implement and periodically review their WSPs. Therefore, the capacity building activities such as training and if possible, utility-utility partnerships, should run in parallel with WSP implementation. Specific mechanisms to provide ongoing support could also be established to facilitate implementation. For example, resource centres or WSP advisory services could be established. The regulator, public health inspector and other WSP experts should also be readily available sources of information.

### Verify that the WSPs are appropriate

The WSPs should be independently verified by the surveillance agency (regulator) or another body that is appointed by the surveillance agency to ensure that the WSP is working properly. These auditors will need to be appropriately trained and qualification requirements should be established. An auditing plan should be developed that includes the time and frequency of the audits, scope of the audit and assessment and reporting criteria. Processes, specifying corrective actions to be taken, should also be in place for when the WSPs are not found adequate, including timeframes for rectifying the identified issues, and potentially, sanctions. Wherever possible generally and certainly in the early stages of WSP implementation, audits should be treated as learning and improving opportunities rather than occasions for imposing penalties.

WSP development in a small water supply system, Bhutan



## 8. Review overall WSP experiences and share lessons learned

**Milestone:** Progress report on country wide WSP implementation citing improvements, challenges and drinking-water quality outcomes.

**Outcome:** Long-term and sustained improvements in the management of drinking-water supplies and in drinking-water quality.

### Continuously review WSP implementation

WSPs are meant to be an ongoing process of water supply management and improvement and not a document that is completed one time and then placed on a shelf. Accordingly, progress in WSP implementation is iterative and should be continuously reviewed. At a national level, this should include, for example, identification of improvements in terms of public health, compliance with drinking-water quality standards and overall due diligence of water suppliers. Gaps in implementation – related to new risks and research, capacity and financial needs should also be identified and addressed.

### Share knowledge and experiences

To facilitate in-country progress in WSP implementation, it is important to frequently share the lessons learned among stakeholder groups. Gained improvements could also be communicated to the public. To aid global progress, it is also important to inform the regional and international community about in-country experiences; sharing with WHO and IWA through WSPortal, publication of papers, attendance of conferences and more formal bi-lateral partnerships between countries can help facilitate this.

## Acknowledgements

A WHO/EMRO meeting on drinking-water quality management convened in Amman Jordan, 26-29 October 2009 and hosted by the Centre for Environmental Health Activities, confirmed the need, and provided the impetus for the development of this document. Hamed Bakir (WHO/EMRO) strongly encouraged its further development. The authors are Jennifer De France and Bruce Gordon (WHO-HQ), Oliver Schmolli (Federal Environment Agency, Germany) and Tom Williams (IWA). Advice and important inputs were provided by Hamed Al-Hasni (Public Authority for Electricity and Water, Oman), Salim Al-Wahaibi (Ministry of Health, Oman), Robert Bos, Jennifer Mercer and Sinead Tuite (WHO-HQ), David Drury, Pranav S. Joshi (National Environment Agency, Singapore), Tasleem Hasan (Pacific Islands Applied Geoscience Commission), Nii Okai Kotei (Public Utilities Regulatory Commission, Ghana) and Colin McLaren (Drinking Water Quality Regulator, Scotland).

WHO is grateful to the Ministry of Health, Labour and Welfare, Japan; the Australian Agency for International Development; the Government of the United States of America; Ministry of Environment and Water Resources, Singapore; Health Canada; and the Drinking Water Inspectorate, United Kingdom, for their support to WHO's work on drinking-water safety.

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