Strengthening the human resource potential as a basis for the development of the potable water supply and disposal sector of the Kyrgyz Republic

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Abstract. This article addresses the issue of development of the Professional and technical development programme for drinking water supply and disposal sector of the Kyrgyz Republic as a strategic document aimed to strengthen the human resource capacity of the sector and to create due conditions for its successful realisation. The programme was developed on the basis of evaluation of the training needs and the institutional potential, with the use of such research methods as desk review of documents, questioning, focus group discussions and in-depth interviewing. The programme envisages involvement of all concerned parties in facilitation of people’s access to drinking water: public authorities, potable water supply and disposal providers, international donors, educational organisations and other partners.

Key words: water supply and disposal, assessment of training needs, institutional capacity, industrial and educational cluster, vocational and technical development.

1 Introduction

Potable water supply and disposal is an important area of the water management policy of the Kyrgyz Republic. Article 3 of the Law of the Kyrgyz Republic “On Potable Water” [1] lists the basic national water-supply principles: meeting the needs of the population in water, maintaining continuously the due quality of drinking water in accordance with the requirements of respective standards, sanitary norms and regulations. In most of the populated areas in Kyrgyzstan, water supply networks were laid as early as in the soviet time, being the property of urban administrative bodies, collective and state farms. After the collapse of the USSR, almost all rural potable water supply systems remained practically ownerless, and the wear of water supply networks exceeded 50% of their total length. Given the severity of the problem, the Government of the Kyrgyz Republic repeatedly took

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measures to improve the country’s rural potable water supply system. It signed some loan agreements with the Asian Development Bank and the World Bank for the purpose of renovation and reconstruction of the existing networks and construction of new rural water supply systems [2].

According to the National Statistical Committee of the Kyrgyz Republic, 64% of urban dwellers and 13% of rural dwellers have access to the centralised water supply network.

**Table 1.** Households’ water supply sources by place of residence in 2019 (percentage).

<table>
<thead>
<tr>
<th></th>
<th>Centralised water supply</th>
<th>Faucet column</th>
<th>Well</th>
<th>Spring</th>
<th>Irrigation ditch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>31.4</td>
<td>58.6</td>
<td>4.2</td>
<td>0.7</td>
<td>5.2</td>
</tr>
<tr>
<td>urban settlements</td>
<td>64.3</td>
<td>32.4</td>
<td>2.7</td>
<td>0.1</td>
<td>0.5</td>
</tr>
<tr>
<td>countryside</td>
<td>13.1</td>
<td>73.1</td>
<td>5</td>
<td>1</td>
<td>7.8</td>
</tr>
</tbody>
</table>

The state policy towards providing clean drinking water to the population is reflected in the adopted strategic and statutory documents [3-6].

**Relevance of the research.** To ensure sustainable development of the potable water supply and disposal system and due quality standards of services provided by the enterprises of the water supply and disposal (WSWD) sector of the Kyrgyz Republic, the country needs highly qualified specialists – with account of the measures to minimise the impact on the environment, proactive response to the existing and potential risks in the form of natural calamities, man-induced disasters and climate change, as well as the measures needed for monitoring and evaluation, with corrective action, if necessary. The lack of professionals, managers and technicians able to take competent managerial and engineering decisions is one of the greatest problems of enterprises providing water supply and disposal services.

In order to achieve the set goals, it is essential for all professionals working in the sector to have up-to-date skills needed to perform production tasks, to adapt to new realities and conditions affecting the sector and to be able to promote the economic and social development of the sector and, in general, to sustainable development of the country.

The assessment of the training needs and institutional potential revealed a number of common problems specific of the enterprises and organisations in the sector, those hindering the human resource development. The authors of the present study propose, on the basis of their findings and successful international experience, an integrated approach involving a number of production/education cluster actors.

**The purpose of the study** is the development of the Professional and technical development programme (PTD Programme) for the WSWD sector in the Kyrgyz Republic.

**The object of the study** is the potable water supply and disposal sector (PWSWD) in the Kyrgyz Republic.

## 2 Materials and methods

The development of the PTD Programme was effectuated on a competence basis with the purpose to enhance and update the general and professional skills of the sector workers through collection of information and analysis of obtained data, using such tools as:
- desk review of documents;
- questioning of WSWD sector employees;
- focus group discussion with employees as well as in-depth interviews with heads of WSWD sector organisations and enterprises and with teachers of vocational training institutions.
3 Results

The governmental policy on improving public access to drinking water, expressed in the above strategic and regulatory documents, prescribes strengthening the human capacity of the WSWD sector through training of employees representing local authorities and water supply and disposal organisations and by improving the regulatory framework of the sector. The authors of the present research treat capacity building of the sector through the creation of opportunities and conditions for the formation of new required skills and competencies with regard for the technical specifics, new technologies and materials used in the PWSWD sector.

The purpose of the PTD Programme for the WSWD sector of the Kyrgyz Republic is meeting the need for raising the potential (knowledge and skills) of managers and technical staff of the WSWD sector of the Kyrgyz Republic in accordance with the new requirements in the sector, as well as the need to strengthen the employees’ soft skills in order to provide due quality services to the population. The main objectives of the PTD Programme are:

- improvement of the legal/statutory framework of the PWSWD sector in respect of human resource management. Creating favourable conditions for the development of the human resource potential in the sector;
- establishment of cluster interaction and partnership network (ecosystem);
- identifying the need for skills and qualifications;
- efficient system of training, retraining and professional development of sector’s employees. Realisation of primary-, secondary- and higher vocational education programmes (knowledge transformation);
- establishment of innovation technology centres. Realisation of research and innovation projects. Generating new knowledge for the sector;
- realisation of social and environmental projects;
- attracting talents to the PWSWD sector;
- digital transformation of the sector;
- information support for professional and technical development of the sector;
- monitoring and evaluation of the PTD Programme.

To ensure sustainable development of the WSWD sector, the authors propose to realise the PTD Programme in the following priority areas:

I. Institutional arrangements and statutory framework for realisation of the Programme.

1. Creation of due institutional environment for realisation of the policy of professional/technical development of the WSWD sector.

2. Development of a policy enhancing the human resource capacity of the WSWD sector

The transfer of professional staff from state and municipal organisations to private enterprises requires immediate response of public authorities in the form of duly developed policy aimed to enhance the sector’s human resource development that will reflect the systemic approach in the formation and capacity building thereof in a highly competitive environment. The use of the systemic approach implies:

- improvement of labour organisation at the enterprises and organisations of the sector by introducing innovative work methods based on results of staff certification and workplace evaluation (which is one of the basic processes for implementing a due payment system, incentives, promotion and staff training), appraisal of achievements, etc;
- work quota setting, along with the introduction of new technologies and implementation of modern incentives systems;
- timely training and professional development of employees;
- setting up a flexible work schedule;
- development of efficient conflict resolution methods, etc.

3. Establishment of qualification levels

The current situation in the PWSWD sector is evident of the shortage of qualified specialists due to some objective reasons (low salaries, being displeased with the profession, etc.). At the same time, the people working in this sphere without proven qualifications (though having qualifications in other areas) have learned necessary skills “on the fly” through on-the-job training [7].

The training needs analysis carried out for the PWSWD sector identified some specific areas for training, retraining and professional development of the sector employees, enabling high motivation for learning, a broad range of training and development opportunities for the workers, thereby increasing the human resource potential of the sector. With regard for these purposes, there is a need for systemic approach to acquisition and renewal of qualifications and a necessity to bring the vocational education programmes in line with the needs of the labour market on this basis [8]. As to the international practice, qualification levels, being standardised, are reflected in a respective qualifications framework, as well as the methods and ways of acquiring necessary qualification.

The National Qualifications Framework (NQF) establishing an integrated scale of qualification levels was approved by the decree of the Government of the Kyrgyz Republic [13].

4. Creating a partnership network

The realisation of the professional/technical development policy of the WSWD sector is carried out in the format of an ecosystem based on industrial and educational cluster involving stakeholders’ networking within the framework of a mutually signed Memorandum of cooperation. The production and education cluster represents a set of interconnected organisations of supplementary vocational, primary, secondary and higher vocational education, as well as the organisations and enterprises within the sector and its partners who join their efforts to form and enhance the employees’ potential in order to meet the needs of the PWSWD sector [9].

The cluster cooperation is engendered on the basis of assessment of the WSWD sector enterprises’ capacity as well as the potential of educational organisations in Kyrgyzstan that have a necessary resource to duly organise and effectuate respective training, retraining and professional improvement (micro-training courses) on the aspects that are relevant and pressing for the enterprises and employees of the PWSWD sector.
This cluster is represented by the following organisations: specialised (profession-oriented) higher education institutions – colleges – vocational schools, training centres – enterprises/organisations of the WSWD sector – local self-government authorities, innovation centres (research centres, laboratories) – state bodies (State Agency of Architecture, Construction and Municipal Housing Economy of the Kyrgyz Republic, Ministry of Education and Science of the Kyrgyz Republic, Ministry of Labour, Department of Sanitary and Epidemiological Supervision, etc.), academic methodological associations under the Ministry of Education and Science operating in the construction sector (engaged in potable water supply and disposal).

The establishment of the Sectoral Council with the participation of the Association of Service Providers, State Agency of Architecture, Construction and Municipal Housing Economy of the Kyrgyz Republic, representatives of the WSWD sector proves to be another factor of sustainability. This is reinforced by the participation in expert groups working over educational programmes in the academic methodological associations under the Ministry of Education and Science of the Kyrgyz Republic, developing state educational standards in the relevant areas of specialist training.

II. Specialist training for the WSWD sector.

The State Agency of Architecture, Construction and Municipal Housing Economy of the Kyrgyz Republic represented by the Department for development of potable water supply and disposal (WSWD Department) also serves as an initiator of specialist training for the WSWD sector; it monitors and evaluates the training quality, regulates the number of trained specialists, coordinates retraining and professional development of the PWSWD sector employees with the Ministry of Education and Science of the Kyrgyz Republic. A relevant Memorandum will be concluded with the Ministry of Education and Science of the Kyrgyz Republic. For the first time within the years of education reforms in Kyrgyzstan, the specialist training process will start with the employers’ target request; educational organisations will plan their activities proceeding from employers’ needs in specialists, which in fact has not yet been practiced in the educational system of the Kyrgyz Republic.

The basic educational institutions of Bishkek and Osh are the cluster fulcrums helping the State Agency of Architecture, Construction and Municipal Housing Economy of the
Kyrgyz Republic, the WSWD Department and the Association of Service Providers to exercise their work (Table 2):
- analysis of the situation in the sector to identify training needs;
- setting qualification requirements (professional standards) and procedures for recognition/certification of qualifications and skills;
- coordination of development, revision, monitoring and evaluation of educational programmes, training modules and learning technologies in accordance with the National Qualifications System.

### Table 2. Basic educational institutions.

<table>
<thead>
<tr>
<th>Cluster members</th>
<th>Bishkek</th>
<th>Osh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic educational institutions</td>
<td>- Kyrgyz State University of Construction, Transport and Architecture (KSUCTA) – higher vocational education; - Bishkek College of Architecture and Construction Management – secondary vocational education; - Vocational school No. 5 – primary vocational education</td>
<td>- Osh Technological University – higher vocational education; - Osh Civil Engineering School – secondary vocational education; - Vocational school No. 16 – primary vocational education</td>
</tr>
<tr>
<td>Basic enterprises</td>
<td>- municipal enterprise Bishkek Water Service Company / rural public association of potable water consumers</td>
<td>- municipal enterprise Osh Water Service Company / rural public association of potable water consumers</td>
</tr>
<tr>
<td>Cluster participants in the regions</td>
<td>Issyk-Kul State University, Naryn State University, Jalal-Abad State University, Talas State University, Batken State University as well as vocational colleges and technical schools located in the regions</td>
<td></td>
</tr>
</tbody>
</table>

### III. Specialist retraining for the PWSWD sector

A number of pilot training modules will be realised within the framework of the PTD Programme on the basis of some selected educational institutions, with financial support under the Sustainable rural water supply and sanitation project (Community Development and Investment Agency of the Kyrgyz Republic, World Bank); in addition, a number of modules and educational programmes will be proposed for realisation, for the period from 2022 to 2026 (48 months).

The WSWD sector employees having practical experience of professional activity at sector-managed enterprises, those with no relevant qualification, will be awarded qualification in accordance with the National Qualifications Framework upon successful completion of the retraining programme. The employees will be able to apply their knowledge more professionally after retraining, will have an opportunity to change specialisation and the right to work in several areas, which makes a specialist a universal professional, enhances his/her value for employers. Such a worker will be able to apply for promotion, to access extended functional responsibilities and powers, will have an opportunity to advance to positions requiring extensive knowledge in related fields, which will create due prerequisites for development of high-quality services to the population. In the course of implementation of the retraining programmes, a cumulative system is used, i.e. accumulation, accounting and recognition of the previous-training results [10].

### IV. Professional development of specialists and partners of the WSWD sector

The specialists of the WSWD sector, those having appropriate qualification and professional experience at respective-profile enterprises, are expected to acquire new skills
upon successful completion of the qualification enhancement programme. They will raise their professional level within their qualification and be able to professionally apply their knowledge; take on additional responsibilities, adapt more easily to changing conditions of work, apply for career development, claim to extend their functional responsibilities and powers, manage the work progress. Upgrading their qualification, the employees feel cared for by the company, which contributes to their increased motivation and job satisfaction [12].

The Programme for development of potable water supply and disposal systems of populated areas in the Kyrgyz Republic until 2026 is evident of the application of new technologies and innovative construction techniques aimed to reduce the capital value and running costs in the PWSWD sector, thus contributing to the efficient use of the available, though quite limited, funds.

**Perspective areas for the PTD Programme:**
- establishment of research laboratories on the basis of advanced enterprises of the WSWD sector in order to engage in fundamental and applied research towards solving the major scientific, technical and technological challenges of the PWSWD sector, which includes execution of student's essays and graduation papers, research work and innovative design projects prepared by bachelors, masters, PhD doctors;
- manufacturing application of green economy technologies developed by research laboratories (e.g. research, design, etc. aimed to reduce the risks of negative environmental impact on the regions; solar panels at selected sector enterprises, fostering the water conservation culture, etc.);
- realisation of social projects which takes place with support and active involvement of cluster-interactive educational organisations (activities to develop due culture of drinking water consumption and protection organised for children of pre-school and secondary education institutions, actions and flash mobs to draw public attention to drinking water problems with the purpose to increase responsibility in the area of potable water use, etc.)
- talent attraction programme in the PWSWD sector (assigning graduates to work at basic enterprises, institution of grants and scholarships, graduates’ job placement under target training programmes, etc.)
- digital transformation of the WSWD sector (integrated information system for human resource management of the sector, digitisation of staff data particulars, statistics on training, retraining and professional development in the sector);
- information support towards realisation of the Programme (communication strategy, dissemination of information for the target audience, etc.).

### 4 Conclusion

While working over the study, the authors came to the conclusion that the realisation of the PTD Programme may face the following risks impeding the realisation of the programme:
- shortage of highly qualified trainers;
- weak networking of vocational education and practical training programmes;
- low awareness of the WSWD sector enterprises and local authorities of the resource inherent in the higher, secondary and primary vocational education system in respect of training, retraining and professional development;
- lack of funding to secure the measures envisaged by the PTD Programme.

In order to avoid possible risks attending the implementation of the PTD Programme, it is necessary to envisage active involvement of all social partners (state structures, public organisations, WSWD sector enterprises) in the realisation thereof, its evaluation and monitoring through introduction of motivational management.
The study has shown that the most pressing issue is improvement of the sector’s financial sustainability through adherence to economically justified tariff policy. It is necessary, at the estimate and budget planning stage, to envisage the costs of professional development and human resource potential enhancement for the sector enterprises.

The authors propose the following sources of funding to be used for the programme:
- enterprises’ revenues from provision of services (tariff);
- funds from the state budget;
- funding of workforce retraining and advanced development from the budget of the WSWD sector enterprises;
- special facilities provided by primary-, secondary- and higher vocational education organisations;
- training fees (individuals and legal entities, including through education loans);
- funds donated by international and national organisations.

In addition, the authors deem it necessary to emphasise that the execution of tasks within the PTD Programme will also be based on identification of resource requirements and specification of funding sources, with envisaged possibility to involve partners [11]. Risk analysis should be envisaged at various phases as well as comparison of different scenarios. The realisation of the Action plan under the PTD Programme should be monitored on an ongoing basis, with assessment of interim results.

The success of the PTD Programme and the Action plan for its realisation largely depends on understanding by all participants of the need for due transformation of all processes towards comprehensive development of the WSWD sector. The main development areas specified in the PTD Programme are complementary and updatable, designed to secure due realisation of the programme towards proper transformation of the WSWD sector of the Kyrgyz Republic.

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