



Annual Report

2012

T. G. Masaryk Water Research Institute, public research institution

Prague 2013

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Introduction

In 2012 the first five-year period of the existence of the T. G. Masaryk Water Research Institute, p.r.i., as a public research institution ended. The Council of the Institute which was elected by the Institute staff in accordance with the Act No. 341/2005 Coll. on public research institutions in 2007, finished its term. In this introduction, I would like to thank all the external and internal members of the Institute's Council. Thanks to the Council members, all the duties requested by the law in connection with the change of the legal subjectivity from a state contributory organization to a public research institution were fulfilled.

This period was characterized by permanently changing external environment; the global environment was changing economically along with the environment in the Czech Republic (CR). From our point of view, the changes at the Ministry of the Environment of CR are the most relevant. During the 2012 changes happened at the positions of Secretary of the Minister, Director of the Section of Technical Protection of Environment and also in the Water Protection Department. The rules for evaluation of scientific results and financial sources for research have been altered as well. All these changes had to be responded to by internal measures in the Institute and we had to flexibly adjust to them. And that was one of fundamental roles of this Council of the Institute in cooperation with Institute's management.

The elections of the new Council of the Institute had to be organized at the end of the Council's term of office. The elections took place in February and March 2012. The newly elected Council of the Institute started to fulfill all the duties requested by the law; among others it invited applicants for position of Director of the T. G. Masaryk Water Research Institute, public research institution. Despite the fact that a candidate was chosen in both selection procedures and he was recommended to be named by Minister of the Environment, this appointment has not been realized yet. The Minister of the Environment also named new Supervisory Board in October 2012.

The first five-year period of term of office of all administrative bodies of the public research institution concluded in light of all these changes. The new bodies were established by electing a new Council of the Institute and by temporary authorization of director. The next five-year period of the T. G. Masaryk Water Research Institute, public research institution, started.

The Institute participated in projects financed by the Operational Programme "Environment", from national resources of the State Environment Fund and resources of other funders – Technological Agency of CR, Grant Agency of CR, the Ministry of Agriculture, the Ministry of Culture and international projects financed from resources of EU. We succeeded to participate in many commercial contracts and projects that are the only source for cofinancing of research projects. Simultaneously, new projects were proposed; during the year 2012 more than 100 new research projects were submitted. The preparation of the project "Strategy of Protection against Negative Flood Consequences and Erosion Phenomena by Natural Measures in CR" was finalized.

The upcoming fundamental task for the newly established bodies will be the creation of new strategy of the Institute until the year 2020. This strategy has to be created on the basis of experience from the first term of office bearing in mind that stability of outer environment will be even lower than in the previous five years. The awareness of this fact and ability to adapt to unexpected changes will have to become our advantage in the next period. I hope that we will be more successful in these aspects than in the previous period.

I would like to thank all that not only in 2012 but in the whole previous period contributed to the fact that T. G. Masaryk Water Research Institute, public research institution, always fulfills the function of a national and international research base in the area of water and waste.

Mgr. Mark Rieder
authorized to direct the public research institution



2 Information on Institute Bodies Members and Activities

2.1 Institute bodies and their members

a) Director: Mgr. Mark Rieder (from 19th June 2012 authorized to manage the institution)

b) The Council of the TGM Water Research Institute, p.r.i.:

Members of the Council until the elections in March 2012:

Ing. Karel Drbal, Ph.D. (TGM WRI, p.r.i., Brno Branch) – chairman,
Ing. Ladislav Kašpárek, CSc. (TGM WRI, p.r.i., Prague) – deputy chairman,
Ing. Jaroslav Beneš (Vltava River Board, state enterprise, Prague),
Prof. Ing. Pavel Pitter, DrSc. (Department of Water Technology and Environmental Engineering, Institute of Chemical Technology, Prague),
Ing. Josef Reidinger (Ministry of the Environment of CR, Water Protection Department, Prague),
Prof. Ing. Jiří Zezulák, DrSc. (Faculty of Environmental Sciences, Czech University of Life Sciences, Prague),
RNDr. Dana Baudišová, Ph.D. (TGM WRI, p.r.i., Prague),
Ing. Václav Bečvář, CSc. (TGM WRI, p.r.i., Prague),
Ing. Eduard Hanslík, CSc. (TGM WRI, p.r.i., Prague),
Ing. Tomáš Mičaník (TGM WRI, p.r.i., Ostrava Branch).

Members of the Council from April 2012:

Ing. Petr Tušil, Ph.D., MBA (TGM WRI, p.r.i., Ostrava Branch) – chairman,
RNDr. Dana Baudišová, Ph.D. (TGM WRI, p.r.i., Prague) – deputy chairwoman,
Ing. Eduard Hanslík, CSc. (TGM WRI, p.r.i., Prague),
Ing. Anna Hrabánková (TGM WRI, p.r.i., Prague),
Ing. Jaroslav Beneš (Vltava River Board, state enterprise, Prague),
Ing. Rut Bízková (President of the Technology Agency of CR, Prague),
Mgr. Vít Kodeš (Czech Hydrometeorological Institute, Prague).
Secretary of the Council of TGM WRI, p.r.i., is Ing. Michal Vaculík.

c) Supervisory Board

The Supervisory Board members until 14th October 2012:

PhDr. Ivo Hlaváč (Ministry of the Environment of CR, secretary of the minister) – chairman,
Doc. RNDr. Petr Vlasák, CSc. (TGM WRI, p.r.i., research scientist) – deputy chairman,
Ing. Libor Ansorge (TGM WRI, p.r.i., research scientist),
Ing. Milan Blažek (Ministry of the Environment of CR, Head of the Financial Planning Department),
Doc. RNDr. Jakub Hruška, CSc. (Czech Geological Survey, research scientist),
JUDr. Josef Körbler (Ministry of the Environment of CR, Department of the Economical Tools),
Ing. Hana Randová (Ministry of the Environment of CR, Director of the Department of Water Protection).

The Minister of the Environment Mgr. Tomáš Chalupa appointed following members of the Supervisory Board by 15th October 2012:

Ing. Jiří Červenka (Ministry of the Environment of CR, Director of the Department of Internal Audit and Financial Inspection) – chairman,
Prof. Ing. Jiří Wanner, DrSc. (Institute of Chemical Technology, Prague, professor) – deputy chairman,
Ing. Milan Blažek (Ministry of the Environment of CR, Director of the Department of Budget),
Doc. RNDr. Jakub Hruška, CSc. (Czech Geological Survey, research scientist),

Mgr. Jakub Čurda (Ministry of the Agriculture of CR, Head of the Water Management Policy Department),
Ing. Roman Dvořák (TGM WRI, p.r.i., Head of the Centre for Assessing Proficiency of Laboratories – ASLAB).
Secretary of the Council of TGM WRI, p.r.i., is Ing. Jan Rykl from TGM WRI, p.r.i.

2.2 The Report on activity of the Council of the TGM Water Research Institute, p.r.i., in 2012

The members of the Council of the TGM Water Research Institute, public research institution, (TGM WRI Council) have changed in 2012. The new Council was chosen based on the 2nd regular election whose four rounds were organized and carried out on 27th February 2012, 5th March, 12th March and 19th March 2012.

First meeting of the newly elected Council took place on 3rd April 2012. Seven meetings of the TGM WRI Council took place in 2012. The most important conclusions of these meetings were as follows:

- The new Council of TGM WRI, p.r.i., was elected in accordance with Election Rules of the Council of TGM WRI, p.r.i. (article 4, item 5).
- Ing. Petr Tužil, Ph.D., MBA, was elected chairman and RNDr. Dana Baudišová, Ph.D., was elected deputy chairwoman.
- TGM WRI Council discussed and approved the 2011 Annual Report in accordance with section 18, article (2), letter e) of Act No. 341/2005 Coll. on public research institutions, as amended.
- TGM WRI Council approved proposed budget of the institute for the 2012 period.
- TGM WRI Council discussed and approved the changes in the Election Rules of the Council of TGM WRI, p.r.i., in 2012. The main change in the Election Rules of TGM WRI Council is the change of the article 1 (Council members), item 4 and article 3 (Elections), item 6.
- TGM WRI Council approved the adjustment of the organizational protocol of TGM WRI, p.r.i.
- Details of public selection procedure for the position of Institute Director were arranged. The public selection procedure was consequently announced with expected start on 15th June 2012. The selection procedure took place on 10th May 2012. After the selection procedure, the TGM WRI Council proposed to name Mgr. Mark Rieder director of public research institution based on the result of a secret vote.
The Minister of the Environment Mgr. Tomáš Chalupa assigned Mgr. Mark Rieder of managing TGM WRI, p.r.i. The effective date was 19th June 2012. The authorization was temporally restricted until 31st December 2012.
- On 28th November 2012 the second selection procedure of director of TGM WRI, p.r.i., took place. The start date was 1st January 2013. The Council considered three candidates at selection procedure.
Mgr. Mark Rieder was elected unanimously from three candidates that fulfilled the conditions of the competition based on assessment results. The assessment was carried out by competition commission. TGM WRI Council proposed to the founder to name the chosen candidate director of public research institution with effective date 1st January 2013.
The Minister of the Environment Mgr. Tomáš Chalupa consequently assigned Mgr. Mark Rieder of managing TGM WRI, p.r.i., until 28th February 2013.
- The proceedings are made from every meeting. After ten days of approval procedure by members of the TGM WRI Council the proceedings are at disposal to all employees in internal information database of the Institute.

The first year of the activity of the newly elected TGM WRI Council was relatively administratively challenging according to its rights and duties which were given to the Council by Act No. 341/2005 Coll. on public research institutions, as amended, particularly the legal duties regarding selection procedure of the Director of the Institute. TGM WRI Council fulfilled all its duties which are defined

by the above mentioned act. TGM WRI Council also dealt with current status of selected economical parameters of the 2012 budget at every meeting.

2.3 The Report on the activity of the Supervisory Board of the TGM Water Research Institute, p.r.i., in 2012

In 2012, three meetings of the Supervisory Board took place on 27th April, 4th June and 6th December. The most important conclusions are listed below. Director of TGM WRI, p.r.i., Mgr. Mark Rieder participated in two first meetings. Mr. Rieder was abroad at the time of the last meeting; consequently Ing. Petr Bouška, Ph.D., deputy director for research and professional activities participated in the meeting.

The Supervisory Board, after discussion, considered

- the draft of the budget of TGM WRI, p.r.i., for 2012 with objection (the reason was the fact that less than 100% of the proposed incomes were secured),
- the draft of 2011 Annual report without fundamental objections and recommended its approval by the Council of TGM WRI, p.r.i.,
- results of economic activities of TGM WRI, p.r.i., in 2011 that are described in 2011 Annual Report with no objection.

The Supervisory Board gave a prior written agreement to alienation of property at address Babylon 49 within the meaning of paragraph 19, article (1), letter b), and item 1 of Act No. 341/2005 Coll., as amended.

The Report on activity of the Supervisory Board of the TGM Water Research Institute, p.r.i., in 2011 was processed and transferred to be included in 2011 Annual Report.

The Supervisory Board presented the Report about its fifth year of activity (from 1st June 2011 to 30th June 2012) to the founder and Mgr. Mark Rieder within the meaning of paragraph 19 article (1), letter l) of Act No. 341/2005 Coll., as amended.

The Supervisory Board also dealt with current issues of TGM WRI, p.r.i., activities, e.g. economic issues, winning of contracts, elections to the Council of TGM WRI, p.r.i., occupation of the position of director of TGM WRI, p.r.i., and restoration of the Supervisory Board of TGM WRI, p.r.i.

3 Profile of the Institute According to the Founding Deed and Information on Changes

TGM WRI was included to the Register of public research institutions, administered by the Ministry of Education, Youth and Sports, on 1 January 2007.

The activities of the Institute are based on the founding deed of the public research institutions given by Provision No. 12/06 of the Ministry of the Environment from 12 December 2006, as amended by Provision No. 2/11 of the Ministry of the Environment on publication of the full wording of the founding deed from 31 May 2011.

Authorities of the Institute according to the Article 16 of the Act No. 341/2005 Coll., as amended, are as follows:

- The Director – an official representative competent to make decisions within the framework of the public research institution, with the exception of issues in competence of the Council of the Institute, the Supervisory Board or the founder of the Institute.
- Council of the T. G. Masaryk Water Research Institute, public research institution,
- Supervisory Board of the T. G. Masaryk Water Research Institute, public research institution.

TGM WRI specializes in providing research solutions in water management and waste management and is the only research institution in the Czech Republic with focus on both of these areas.

The activities of the TGM WRI derive from its purpose, which is research in the following fields: the status, use and changes of water ecosystems and their linkages with landscape and related environmental risks; waste and packaging management; professional support of the water protection; prevention of flood risks and waste and packaging management based on the above mentioned research.

Activities of TGM WRI are categorized into a main activity and an additionally activity according to the founding deed.

The main activity includes

- hydrological, hydrogeological and hydraulic research
- research of water resources, protection of water and protection of river basins
- research in water chemistry, toxicology and radiology
- research in water biology and microbiology
- research of processes caused by water pollution and elimination of pollution
- research of the status of water and water bodies and protection of aquatic ecosystems
- research of methods for identification and evaluation of water status
- research of ecological relations of water in a landscape
- research of monitoring methods, field measurements and sampling techniques including technical instruments
- research of methods in analytical chemistry including technical instruments
- research of methods for information processing, development and use of databases including geographical information systems
- economic research in relation to water and its use as a component of the environment
- research in remediation of river systems and aquatic remediation of damaged landscape
- research for selection of water biotopes suitable for renewal or remediation and management of databases of relevant sites
- research for protection against harmful impacts of water
- research in water management planning, water balance and use of water
- research in waste management, composition and quality of waste, including dangerous waste and its impact on aquatic environment
- research of landfills and contaminated sites
- research of management of packaging and packaging waste
- research, development, application and evaluation of technological methods for waste management including assessment of waste production and waste management
- development of research infrastructure.

Within its additional activity the Institute ensures

- expert opinions, positions, assessments and analyses in the area of the main activity
- observations, field measurements, sample analyses, chemical analyses in the area of the main activity
- international co-operation, activities in a framework of relevant thematic strategies in the area of the main activity
- co-operation with universities, institutes of the Academy of Sciences and other research institutions in the area of the main activity
- publishing and dissemination of information in the area of the main activity
- proposing of parameters of good ecological status of water
- proposing of programmes for reduction of pollution of surface water by dangerous harmful substances and priority dangerous substances
- assessment of sensitive and vulnerable zones, as well as surface water suitable for life and reproduction of native fish species and other aquatic fauna, protected areas of natural accumulation of water and bathing surface water
- proposing and monitoring of areas of natural accumulation of water in the area of the main activity
- proposing protection measures for water resources
- maintaining registry of watercourses and water reservoirs, protection zones of water supply reservoirs and water supply groundwater resources
- maintaining thematic water management cartography
- assessment and evaluation of surface water and groundwater regime in relation to status of use of water resources
- determination of minimum residual flows and minimum groundwater levels
- expert support to preparation of district river basin management plans
- operation of reference laboratories for all components of the environment
- proficiency testing of hydroanalytical laboratories for chemical, biological, microbiological, toxicological and radiochemical analytical methods and organizing intercalibration laboratory testing in the area of the environment
- methodological guidance for hydroanalytical laboratories and unification of their practices
- expert support to prevention of major accidents involving chemical substances and preparations
- participation in operating the permanent and emergency component of the national radiation monitoring network
- development and operation of the evaluation system of status and potentials of water bodies and reference conditions of water bodies
- establishment and operation of monitoring network for observation of surface water and groundwater except their quality
- strategic and organizational provisions of activities for evaluation and assessment of status of surface water and groundwater
- maintaining and updating registries of water of public administration information system
- assessment of technologies and evaluation of operation of technological installations for water treatment and wastewater treatment
- evaluation of effectiveness of remediation measures of river systems
- expert support to the international co-operation of CR within the framework of bilateral and multilateral agreements and conventions in the area of water protection
- preparation of background documents necessary for meeting the obligations towards the European Union and documents included in reports on implementation of directives in the area of water protection and waste management according to the requirements of the European Community
- evaluation of waste management methods for individual waste types
- operating the waste management information systems and maintaining registry of production and management of waste and packaging
- evaluation of analytical methods and quality of waste, evaluation of efficiency of waste treatment technologies including dangerous waste
- carrying out the function of the National inspection authority for good laboratory practice
- expert support to updating and evaluation of waste management plans
- provision of information on the status of the environment in the area of waste management
- carrying out the function of the expert institution for professional and registering activities
- operating the calibration center for hydraulic measurements
- carrying out the function of the center for evaluation of competency for calibration of measuring instruments for water discharge in conditions of free water level
- operation of a Testing laboratory for water management equipment.

Apart from the above listed functions, the Institute carries out also other activities according to Provision No. 12/06 of the Ministry of the Environment in compliance with the relevant Trade Certificates.

4 The Activity of TGM Water Research Institute, p.r.i., in 2012

Research activities of the TGM WRI, p.r.i., take place primarily as a part of the main activities of the Institute, with significant contribution of supplementary and other activities as specified in the Founding Deed of the Institute.

The core research activity of TGM WRI encompasses mainly the issues of research of the status, usage and changes of water ecosystems and their relations in landscape and connected environmental hazards, protection of the hydrosphere, flood prevention and waste and packaging management. Other important projects include a research of water quality, aquatic environments, use of water, and development of comprehensive proposals aimed at improvement of water quality and functioning of aquatic ecosystems. The research tasks are addressed in the frame of the Research and Development and Innovation Programme and in other projects. The overview of the most important projects is presented in the following description of individual research branches.

Branch of Hydraulics, Hydrology and Hydrogeology oriented similarly as in the previous years (besides basic areas delimited by scientific disciplines in its name) on issues of environment protection. The Branch focused mainly on the contract Review of groundwater resources in CR: Hydrological part in 2012.

Regarding the hydrology issues, the Branch deals with issues of climate change impact on water regime and water resources in CR. The Branch focused on mitigation of climate change impacts in the frame of following projects: "Proposal of a system for managing emergency situations associated with drought and water scarcity in CR" (Ministry of the Interior), "Sustainable use of water resources under condition of climate change" and "The support of long-term planning in water management sector in context of climate changes" (the Technology Agency of CR, TA CR). Other project supported by TA CR is "Securing quality of drinking water supplied to small municipalities from local sources". The project "Research on adaptation measures to eliminate the impacts of climate change in regions of CR" supported by National Agency for Agricultural Research programme was finished in 2012.

Hydraulics issues were dealt with mainly in collaboration with The Directorate of Waterways of CR. The collaboration continued in the frame of the contract Research of the Děčín Barrage Weir: Model research of the stilling basin floor. The project "Development of a tool and methodology for continuous measurements of snow water equivalent in the field" continued; the project is supported by TA CR and deals with development of the instrument and its comprehensive testing in different field and vegetation conditions, the processing of methodology of installation and operation of instrument and measurements of snow water equivalent. The shapes of hydrographs with mean return time ten thousand years were derived in the project "EU COST activity FloodFreq".

The Branch has dealt with protection of groundwater quantity and quality. Besides the issues of groundwater quantity balance, the aspects of groundwater quality have been dealt with (e.g. international study "Delimitation of nitrates vulnerable zones and economic impact of Nitrates Directive implementation in the Republic of Croatia" for Ministry of Agriculture of Republic of Croatia and reporting of Nitrate Directive). Other important projects in this sector were contracts "Progressive technology of environment and effective water resources management in small catchments" and "Protected areas of surface and groundwater for human consumption: Assessment of raw water quality and its use in practice"; both projects are supported by TA CR.

The Branch has dealt with i.e. border groundwaters in the field of hydrogeology and contaminated sites. The research is going on in cooperation with Poland and Saxony respectively. The cooperation with Saxony is mainly in the frame of the GRACE project which is supported by EU funds.

Czech Calibration Station for Current Meters (accredited laboratory) provided the calibration of current meters and other measuring instruments including atypical ones.

Reference Laboratory for the Environment Components and Waste focused mainly on the work on individual projects (continuing from previous years and newly started).

In the field of radioecology, integrated studies were carried out. The studies were focused on the occurrence and behavior of natural and artificial radionuclides in sources of pollution.

Reference radiological laboratory performs the activities of the permanent component of the national Radiological Monitoring Network in the normal and emergency radiological situation in cooperation with River Boards, state enterprises; the activities are based on a contract between Ministry of the Environment and the State Office for Nuclear Safety.

The Branch participated in the project "Possibilities for removal of specific pollutants (PPCPs) in wastewater treatment plants". The Branch carried out the determination of different types of drugs in wastewater. The project "Determination of the amount of illicit drugs and their metabolites in municipal wastewater – new tool for obtaining of complementary data on illicit drug consumption in CR" started in 2012.

The collaboration with association NORMAN continued by establishing a working group for prioritization of emerging pollutants.

The Branch is active also in microbiology, e.g. in the project "New methodological approach to control and evaluation of bathing waters" is supported by TA CR. The project "Optimization of method for detection of assimilable organic carbon by optic detection" started in 2012.

Branch of Water Protection and Informatics participated in annual preparation of Summary water balance assessment of the main river basins of CR according to the Decree of Ministry of Agriculture No. 431/2001 Coll., which provided the results of the analysis of the use of water resources and the water use requirements in terms of quantity and quality. The Branch also participated in processing of materials for Ministry of the Environment for Report on Water Management Status in CR.

The Branch also participated in research focused on economics in water management, namely cooperation on the projects "The safety assessment of critical infrastructure elements – drinking water" and "Transfer of Czech experience with financing of water management in Kyrgyzstan".

The projects aimed at supporting the state administration continued: support of reporting according to the Directive 2006/7/EC on bathing waters, expert support of activity in International Commission for the Elbe River Protection and in the Czech-German Commission for Transboundary Waters. The core activity was work on the project "Jointly used groundwater in the Czech-Saxony transboundary region (GRACE)". Materials were prepared for database of watercourses and revision of hydrological classification in cooperation with Czech Hydrometeorological Institute.

The project "Accuracy classification for existing delimitation of flood plain areas in the Czech Republic, and implementation of the results in delimitation methodology" is another project supported by Ministry of the Interior. The Branch participated intensively in the projects in the Research and Development programme "Emissions and their impact on water environment" and "Protected areas of surface and groundwater for human consumption: Assessment of raw water and its use in practice" and on processing of water management review of current and prospective status of surface water quantity in the Vltava River catchment and on processing of study on possibilities of securing water supply for Dukovany Nuclear Power Plant.

Last but not least the activities of the Branch are targeted towards supporting the technical projects of the Institute from the point of view of informatics (including the public administration support) mainly through development and operation of Hydroecological Information System.

Branch of Water Technology focused mainly on projects for the Technology Agency of CR and for security research (Ministry of the Interior of CR) in continuing or newly initiated projects. The work on a long-term project for the founder (registers of point pollution sources) and on commercial contracts continued.

Securing supplies of drinking and technological water during natural disasters is the topic of the project for Ministry of the Interior coordinated by the Cityplan, Ltd. In this project, the list of risk situations and points was finished and evaluated. The list will be used for crisis analysis in sector of transport and storage of drinking water. Another project for the Ministry of the Interior of CR is focused on the development of a system for securing the supply of drinking and technological water during natural disasters from alternative sources. Complete overview of observed localities in Prague and Brno cities was processed in the project. The selected localities were monitored and survey was carried out at other localities.

The research project for the Technology Agency of the Czech Republic, which focuses on testing options for efficient non-investment intensification of small and rural wastewater treatment plants by using bioactive preparations, continued with long-term observation of operation of small and domestic wastewater treatment plants while testing contamination removal effectivity. Two new projects supported by the Technology Agency of CR started in 2012. The projects are focused on optimization of technology of extensive procedures of wastewater treatment and on solution of extraordinary effective wastewater treatment using combination of technological elements.

Another project (National Agency for Agricultural Research programme) is focused on the removal of residual concentrations of drugs from wastewater. A new technology of wastewater treatment was proposed. The technology removes drugs more efficiently. Simultaneously, the verification of the method started on a pilot model in the test hall of Testing Laboratory for Water Technology. The staff of the Branch has also been involved in a research project for the Technology Agency of the Czech Republic, which focuses on verification of progressive technologies for groundwater protection. The collaboration on new project (National Agency for Agricultural Research programme) started. The project is focused on influence of Phosphorus from erosion on standing waters.

In 2011, the Testing Laboratory for Water Technology continued working in similar extent as in previous years. The Laboratory is accredited according to the standard CSN EN ISO/IEC 17025 by Czech Accreditation Institute under the number 1492. Testing Laboratory of Water Equipment (a part of the Testing Laboratory for Water Technology) carried out tests of the effectiveness of small wastewater treatment plants for the purposes of their certification. The testing was carried out according to the procedure laid down in standard CSN EN 12566-3 +A1. Other tests of water management facilities were carried out. Some wastewater treatment plants were tested by the procedures reflecting the client requirements.

Brno Branch is traditionally oriented on flood issues; it participates in the international CEframe project (in cooperation with Austria, Slovakia and Hungary). The project focuses on determination of the potential flood damage and subsequent flood risk.

The project "Flood Protection Education and Research Centre" allowed mainly the students of the University of Technology and of the Masaryk University to get acquainted with many aspects of flood related issues.

The staff of the Branch participated also in several newly started research projects.

One of the research work sectors is focused on the issues of the assessment of threats for Cultural Heritage Objects, UNESCO objects and other important historical objects in CR from natural and anthropological influences including floods, erosion and landslides, industrial activity and transport infrastructure. The project is carried out in cooperation with The National Heritage Institute and with contribution from experts of other organizations (Transport Research Centre, Czech Geological Survey, and Mendel University).

An interesting project in the programme ALFA of the Technology Agency of CR is concerned with issues of watercourses drying in the climate change period (www.sucho.eu). The first versions of maps of watercourses threatened by dry-up were constructed in the project's first year. The overviews of selected properties of groups: mayflies, stoneflies and caddis-flies. The project results have been already presented at several national and international conferences.

Other important research is focused on issues related to wastewater treatment including development of new technologies and optimization of technologies that are already used. The cooperation has been initiated with several companies that operate not only in CR, but also abroad. The successful collaboration with expert water management and chemical institutes of the Technical University in Brno continues. The collaboration with expert organizations and public universities was also initiated while dealing with issues related to fishponds and small water reservoirs in CR: a review of historical development of occurrence of fishponds in CR and potential of their renovation as a component of comprehensive solution for landscape water management.

The staff of the Branch also permanently ensures the tasks arising from the activities of the committees focused on cooperation in transboundary waters with Slovak Republic and Austria. In the frame of expert support to the participation of CR in the International Commission for the Protection of the Danube River, the Branch activities focused on preparation of materials needed for key expert groups (P&M, MA, Nutrients). The aims defined in the Danube River Basin Management Plan and activity range of individual expert groups formulate the requests on the activities.

The Branch staff secured the support of Execution of State administration in connection with fulfillment of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes.

The commercial activities were e.g. organization of inventory surveys in the frame of Natura 2000 implementation in areas administrated by Nature Conservation Agency of CR. Specifically, the small protected areas were investigated in the Beskydy Protected Landscape Area and Skalická Morávka National Natural Monument was also investigated. Other commercial activity is consultancy services in the area of using of constructed wetlands and extensive water treatment technologies, the operation of such wastewater treatment plants and the impacts of waste water discharges on the water quality in receiving water bodies. The services were provided to municipality administrations, non-governmental organizations and projection companies, and the public.

Ostrava Branch focused on the NAVARO project "Development of tools for early warning and response in the field of the protection of surface waters" whose objective is to develop a certified methodology and a manual for rapid detection of accidents with impact on surface water. Two monitoring stations were built and equipped on the Oder and the Olše Rivers. Linking with automatic sampling device is processed.

The Branch focuses on the issues of dangerous substances in the aquatic environment continuously. "Register of Industrial Pollution Sources – dangerous substances" is a project of updating the data in area of handling with selected dangerous substances and their emissions in water environment. The content of the registry is being adapted according to the requirements arising from legislation and the requirements necessary for the preparation of materials and outputs required by the Ministry of the Environment and the reporting for European Commission in given area.

The Branch participates in fulfillment of International Commission for the Protection of the Oder River against Pollution by participation in the work of the steering group WFD and subgroups on Planning and Monitoring. Main attention was paid to finishing strategies of morphological changes in surface water bodies, hydraulic transverse structures and significant contamination load.

In the framework of cooperation on transboundary waters with Poland the activities focused on flood measures at the transboundary sectors of the Opava River and the Petrůvka River.

The issues following from preparation of construction of Nové Heřminovy reservoir were dealt with in cooperation with the Polish partner. The materials have been prepared for geometric harmonization of transboundary water bodies at the Czech-Polish part of the state border. A working group of hydrologists and hydrogeologists carried out joint experimental measurements at important Czech and Polish localities in the area of the Police basin and the Stěnáva River basin.

The project "DRAGON" started in 2012. The project is supported by Ministry of the Interior and focuses on illegal drugs and their metabolites in municipal wastewater. The localities and agglomerations were selected for sampling and the necessary administrative work was carried out in selected areas: Ostrava, Brno, Ústí nad Labem, Plzeň and Prague.

The projects financed in frame of National programmes of State Environmental Fund of CR started by the end of 2012. The projects are focused on processing methodologies of the assessment of ecological potential of running surface water bodies – category "river", assessment of groundwater bodies' status and methodology of the assessment of protected areas status (Drinking Water Protected Areas, Article 7 WFD 2000/60/EC).

Centre for Waste Management started a new two-year project "Possibilities of using information and resources of waste management data as a tool for identification and solution of unauthorized waste management" in the beginning of 2012. The project is supported by Ministry of the Interior. The objective of the project is to demonstrate the possibilities of using information and data sources from waste handling sector as tools for identification and solution of unauthorized waste handling. The results will be used for increasing the level of knowledge, adoption and maintaining knowledge needed for this sector. The preparedness of governmental bodies in the scope of competencies of the Ministry of the Interior will increase. Consequently, the effectivity of the police or Fire Rescue Service intervention in case of suspicion of unauthorized waste handling or in case of accident will also be increased.

In 2012, the preparation of the public procurement "Analysis of material flows of waste electrical equipment and possibilities of increasing their recyclation, use and reuse" was realised. The Centre won the project in the frame of BETA programme of the Technological Agency of CR. The project objective is a detailed analysis of material flows of waste electrical equipment (WEE) using monitoring of current collection and processing of electrical and electronic equipment (EEE) including analysis of illegal or partly illegal flows of WEE, investigation of lifetime of selected EEE and estimations of putting on market.

The collaboration continued on the project "Innovation and extension of teaching focused on environmental issues at the Faculty of Science of the Masaryk University Brno". The research results are presented at conferences and confronted with the work of other experts. Scientific results are also published in peer-reviewed journals.

Branch of Applied Ecology started a unique project supported by Ministry of Agriculture of CR in 2012. The project is focused on determination of migratory success of currently critically endangered Eel (*Anguilla Anguilla* L.) in the whole area of CR. Another important project is collaboration on development of the system for the automatic monitoring systems of fish migration based on the use of methods of fish group marking with PIT technology (Alfa programme of the Technological Agency of CR). Systems are tested in field conditions.

The interdisciplinary project supported by Omega programme of the Technological Agency of CR is focused on harmonization of aquaculture and recreational fishing sectors with protection of water ecosystems.

The leadership of international exercise comparing methods of ecological status of running waters was successfully completed. The methods were compared among member states in the frame of the Eastern Continental Geographical Intercalibration Group.

The Branch focused also on the project dealing with Phosphorus contamination, eutrophication and more broadly a general assessment of emissions into water environment and assessment of surface water bodies' status. The important activity was the initiation of a project that focuses on investigation of the effect of different wood structures on stability of watercourse banks and their potential use by natural revitalization.

Two studies were carried out in addition to the mentioned activities: a study of the impact of potential enlargement of Dukovany Nuclear Power Plant on hydrosphere and a study for support of evaluation of water quality in catchments administered by Vltava River Board, s.e.

Additionally, the project focused on development of technologies of treatment of water on above-standard quality was carried out. The research of stygofauna was carried out in collaboration with the biology station in Lunz in the frame of a transboundary Czech-Saxony project that focuses on groundwater protection. Long-term project carried out in cooperation with Šumava National Park has shown that coverage of submerged macrophytes has increased in a part of the Vltava River in the long term. The part of the Vltava River is negatively influenced by tourism. The results of the research on host-parasite relationships, food ecology and protection of big bivalves were presented at the first global conference about ecology and protection of big bivalves (Bragança, Portugal) in five contributions including the plenary presentation.

ASLAB – Centre for Assessing Proficiency of Laboratories is a part of TGM WRI, p.r.i. ASLAB is authorized in accordance with the mandate of the Ministry of the Environment to carry out the state delegated powers:

- Organization of intralaboratory proficiency testing in the field of environmental laboratory analyses,
- Assessment of professional competence of hydro-analytic laboratories in the area of environmental research and protection in accordance with the quality management system CSN EN ISO/IEC 17025 and
- Acting as a National Inspection Authority on good laboratory practice in the area of chemical substances and chemical preparations in accordance with the Act No. 350/2011 Coll. and Regulation No. 219/2004 Coll., as amended.

Significant proportion of ASLAB activities falls to proficiency testing that forms the fundamental level of external supervision over hydro-analytic laboratories. In 2012, 372 laboratories from CR and Slovakia participated in testing.

ASLAB organized 11 proficiency testing projects in chemistry and radiology. The number of 305 laboratories participated. Four interlaboratory comparisons of tests in microbiology, hydrobiology and ecotoxicity were organized and 67 laboratories participated.

ASLAB granted the Certificate on Good Laboratory Practice to 14 newly assessed laboratories in 2012. During the year, the total number of the assessed laboratories increased to reach 50.

In the area of good laboratory practice, ASLAB checked by 31st December five testing devices and conducted eight inspection visits (three periodic, one introductory and four targeted). A list of the tested equipment is available from the ASLAB website.

In addition to the standard activities (inspections, consultancy, lecturing), a representative of the National inspection authority participated in a meeting of the Working Group of Good Laboratory Practice of OECD.

ASLAB activities include also cooperation in developing of new regulations and together with Ministry of the Environment cooperation in preparation of new legislation in the area of management of chemicals. Representatives of ASLAB participated in meetings of technical groups and provided comments on drafts or translations of technical standards. ASLAB prepared summary information on the practical use of standards during field works for decision making about the requirements concerning new standards.

In the context of its activities the T. G. Masaryk Water Research Institute, p.r.i., also participates in public tenders and seeks opportunities to apply the expertise of its divisions. TGM WRI participated in the public competitions from 8 providers with a total of 87 of the proposed projects in the framework of the announced tenders and programmes realized according to Act No. 130/2002 Coll. The Institute succeeded at five providers with 8 projects as the main project manager and with 3 projects as a co-operator.

Additionally, 77 business opportunities were found. The opportunities were proposals of commercial contracts based on different calls and public procurements. Twenty proposals have been prepared after consultation. Five contracts have been obtained. Other 30 contracts have been obtained based on personal consultation of research managers.

TGM WRI, p.r.i., was awarded the certificate of conformity of quality management system with the requirements of CSN EN ISO 9001:2009 in the subject area covered by the activities provided for in the founding deed in 2011. That is very important for winning projects.

Implementation of quality management system improved effective management which is reflected in increased effectiveness of investing of means and sources and improvement of customer services.

Communication with a customer has a positive impact on improvement of process management. Targeted feedback is an information source that allows better satisfying of the needs of a customer. The internal quality management system was evaluated in 2012. The objective was to determine the extent of its implementation for securing its continual suitability, adequacy and effectivity.

Evaluation of results of research projects and research and development projects and other projects and contracts for 2012 is based mainly on eligible research results in the RIV (Czech registry of information on research outputs) database, but also other important outputs of expert activities.

4.1 Main activity

4.1.1 Publications in journals

In 2012, the employees of the Institute were authors or co-authors of 69 contributions in scientific journals. We succeeded in increasing the number of contributions published in journals with IF. There were 25 such contributions in 2012 (e.g. in journals Environment International, Animal Conservation, Biological Invasions, Journal of Hydrology and Hydromechanics, International Review of Hydrobiology, Freshwater Science, Transactions of the American Fisheries Society, Aquatic Conservation: Marine and Freshwater Ecosystems, Journal of Hydro-Environment Research etc.). The absolute majority of the other contributions were published in peer reviewed journals. The employees of the Institute were also authors or co-authors of 50 contributions in conference or seminar proceedings.

4.1.2 Monographs and proceedings published by TGM WRI

TGM Water Research Institute published two monographs – “Research on adaptation measures to eliminate the impacts of climate change in regions of the Czech Republic” and “Simulation games on flood operational management: a tool for the integrated strategy of flood control”. TGM WRI also published Proceedings of XIX consultation days for water management radiological workers.

The employees of TGM WRI participated in preparation of other publications in Czech: “Radioactive substance in environment”, “Handbook of a water treatment plant operator”, and “Water in the house and in the cottage – using of rain- and wastewater” and processing of one chapter in publication “Environmental modeling and control system design”.

4.1.3 Results with legal protection and technically implemented results

In 2012, two utility models were registered. The passive time integrating sampler of water and undissolved substances contains the technical solution that allows the representative sampling of water and undissolved substances or bonded substances from small and middle watercourses during the periods of high flow (during ascending and descending phases of hydrograph). The technical solution is applied at sites where when the flow increases, the concentration of undissolved substances or other monitored parameters changes.

The utility model Snow balance with mechanism that prevents snowbridging represents a technical solution of measurement of snow water equivalent by using the snow balance with additional special utility that prevents measurements errors because of snowbridging. The device allows gaining continuous observational data also in the case when the snow layers have unfavorable properties.

4.1.4 International cooperation in research

The experts of TGM WRI, p.r.i., participated in many international projects in 2012: e.g. the partial project of COST EU European procedures for flood frequency estimation (FloodFreq) in the frame of cooperation with CEH Wallingford. The set of simulated continual series of catchment outflow for current climate (100 thousand years long) was created for the site Skalka on the Ohre River in frame of a subproject called “Continuous simulation for the estimation of flood frequency within the framework of the GLUE methodology (COST)”.

The preparation of implementation of individual European directives is realized in accordance with the fact that Croatia will join EU in 2013. The motivation for Croatia is to be prepared to fulfill the directives from the beginning of membership. That is why the Ministry of Agriculture of the Republic of Croatia announced a call for project “Delimitation of nitrates vulnerable zones and economic impact of Nitrates Directive implementation in the Republic of Croatia (Agricultural pollution control project)” that would resolve the implementation of Nitrate Directive 91/676/EEC. The output of the project of TGM WRI was the designation of vulnerable zones in two variants: for the whole area of Croatia and for 51% of area with designated specific areas.

The objective of the GRACE project is protection of water sources and identification of causations of dropping of groundwater levels in two cross-border areas: Hřensko–Křinice/Kirnitzsch and Petrovice–Lückendorf–Johnsdorf–Oybin. The outputs will be common strategies of protection of groundwater in the two areas. The project is supported by European Regional Development Fund via Programme Objective 3 for support of cross-border activities between CR and the Free State of Saxony.

The employees of TGM WRI, p.r.i., participated also in the CEframe project that is focused on flood risk assessment and management in Central Europe, specifically at the Morava, Dyje-Thaya,

Danube and Lajta-Leitha border rivers. Representatives from Austria, Slovakia, Hungary and CR participated in the project.

The part of the ETZ project "Polder Confluence – Renaturierungskonzept" is carried out in cooperation with the Austrian company Via Donau and the Morava River Board, s.e. The project is focused on using the space above the confluence of the Morava and Dyje Rivers for the flood protection including the realization.

Other cooperation was focused on collaboration with UNDP Kyrgyzstan in the frame of the project "Transfer of best Czech experience in the field of water financing in the context of integrated water resources management adapted for Kyrgyzstan", on collaboration with the Comenius University in Bratislava in the Mobility project and on work in the UNESCO group FRIEND (Low flow and drought).

4.1.5 Presentation at international meetings of experts

The employees of the Institute participated in the international experience exchange. They participated in the organization of international conferences: International Conference on Groundwater in Fractured Rocks and Biology, Ecology and Conservation of Freshwater Pearl Mussel in Central Europe.

They participated in 32 international conferences and had 47 oral presentations, conference proceedings or posters. The most important conferences were e.g. Hydro-Predict 2012 (Wien, Austria), 39th International IAH Congress (Niagara Falls, Canada), Ground-water Vulnerability – Emerging Issues and New Approaches – IMVUL Conference (Paris, France), Asia-Pacific Power and Energy Engineering Conference – APPEEC (Shanghai, China), The 19th International Conference of the Israel Society for Quality (Jerusalem, Israel), 1st Bulgarian National YWP Conference (Sofia, Bulgaria – the presenter from TGM WRI received the award for the best presentation), IWA 4th Eastern European Young and Senior Water Professionals Conference (Saint Petersburg, Russia), 13th International Conference Wetland Systems for Water Pollution Control (Perth, Australia), 39th IAD Conference (Szentendre, Hungary), 12th International Geo Conference – SGEM (Bulgaria), Ecology and Conservation of Freshwater Fish (Cerveira, Portugal), The Physiology of Fish Behavior (Norwich, England), and many others.

4.1.6 Important national meetings of experts

In 2012, employees of TGM WRI, p.r.i., participated in the organization of conferences Water Reservoirs 2012 and Analytics II. They also organized a workshop on issues of occurrence and removal of specific pollutants from wastewater in wastewater treatment plants. TGM WRI participated in the organization of seminars: Consultation days for radiology laboratory workers, Seminar for hydrobiologists on water management laboratories, Microbiological seminar for water management laboratories and seminar New methodology approaches for monitoring and assessment of surface bathing waters.

Four seminars took place in the frame of the project "Flood Protection Education and Research Centre"; three lectures took place in the frame of the project "Information platform for cultural landscape"; two cycles of the course "Communication and basis of presentation in practice" were organized and Open House Day took place at Brno Branch.

Two courses of sampling were also organized for workers of water management and monitoring laboratories.

Public could get acquainted with the scientific issues that are resolved in TGM WRI, p.r.i., at 25 seminars organized at Prague, Brno and Ostrava in 2012.

The employees of TGM WRI, p.r.i., had 68 presentations (oral and posters) at 42 national conferences and seminars: e.g. VIIIth Prague Security Conference "Energy – Water – Food", Key Security and Prosperities Commodities for Europe in 21st century, Adolf Patera Workshop 2012, Conference of 10th Anniversary of Flood 2012, Flood Protection 2012, River Landscape 2012, Transport, Health and Environment.

4.2 Additional and other activity

4.2.1 Methods and results reflected in standards and legislation

The Institute staff was also significantly involved in the preparation of guidelines, legislation and standardization.

The staff of the Institute participated in the preparation of the standards: CSN 75 7600 Water Quality – Radionuclides Determination – General Provisions, CSN 75 9010 Rainwater Infiltration Facilities and TNI 75 7531 Water Quality Determination of absorbable organically bound halogens (AOX) in wastewater with higher concentration of chlorides. They also participated in the translation of the standard CSN EN ISO 10870 Guidelines for the selection of sampling methods and devices for benthic macroinvertebrates in fresh waters.

Regarding legal directives and methodological documents the Institute staff participated e.g. in preparation of Government Decree No. 262/2012 Coll. on delimitation of vulnerable zones and action plan. For selected departments of Ministry of the Environment several materials have been prepared: material for methodology of minimum residual discharges determination as a base for preparation of government decree or methodological direction for determination of Mercury (Hg) and Cadmium (Cd) in portable batteries or accumulators, methodology of general physical-chemical components evaluation in running surface water bodies and many methodologies dealing with evaluation of ecological status of running surface water (category river) using biological components: fish, phytobenthos, phytoplankton, macrozoobenthos. The methodology on climate change impacts assessment and preparation of adaptation measures in water management has been prepared for the Ministry of Agriculture.

4.2.2 Consulting and expert activity including support for the state administration

Consulting and expert activity is an important form of the direct application of research results. This activity included preparation of 23 expert reports and four expert studies in 2012. Furthermore, comments were made to 29 standards relating to water and 9 standards relating to waste in cooperation with Technical Standard Commission. Consulting services were permanently provided in various areas for local authorities, non-governmental organizations, and specialized laboratories and also for the public. Example of such activity is the creation of documentation for inventory survey in the frame of Natura 2000 implementation in areas administrated by Nature Conservation Agency of CR for small protected area in the Beskydy Protected Landscape Area.

The support of the state administration was focused on a series of tasks especially for Water Protection Department and Waste Department of the Ministry of the Environment. The staff of the Institute was involved in reporting for the EU, the European Environmental Agency, etc.

The employees of the Institute are significantly active in international commissions – International Commission for the Protection of the Elbe River, Standing Committee for Saxony of the Czech-German Commission for Transboundary Waters, International Commission for the Protection against Pollution of the Odra River, Commission for Transboundary Waters with Poland and International Commission for the Protection of the Danube River. The staff of the Institute is

involved in many expert groups within these commissions and also in preparation of the documents for their meetings.

4.2.3 Other activities

An important part of the activity of the Institute includes also collaboration with universities. The staff of the Institute presented a series of lectures at e.g. Faculty of Natural Sciences of the Charles University, Faculty of Environmental Sciences of the Czech University of Life Sciences, Faculty of Civil Engineering of the Czech Technical University, Faculty of Natural Sciences of the Masaryk University, the VSB-Technical University of Ostrava and Faculty of Natural Sciences of the Ostrava University. The employees of the Institute are members of state examination commissions at the Faculty of Civil Engineering of the Czech Technical University and the Faculty of Environmental Sciences of the Czech University of Life Sciences. They are also supervisors and consultants of dissertation and diploma theses. Students can participate in excursions organized by the staff.

The staff is also active in national and international professional organizations and scientific associations – Czech National Committee for Hydrology, Czech Meteorological Society, Czech Hydrogeologists' Association, International Association of Hydrogeologists IAH, working group for Prioritisation of emerging substances etc. Ms. Šárka Blažková, Ing., DrSc., is a member of editorial boards of the journals: Hydrological Processes and Hydrological Sciences Journal.

4.3 Economic issues

The year 2012, which is already the sixth year of TGM WRI operating as a public research institution, is from an economic point of view very similar to the previous year. Concerning the fact that economic assumptions have not been fulfilled and some projects did not start (regardless the reasons), radical economic measures had to be made to secure balanced economy. Increase in the costs (energy, fuel, services, etc.) consequent to continuing global crisis and connected problems, e.g. decrease number of clients, caused that it was very challenging to create a balanced budget and even more difficult to fulfill it.

The Economy of the Institute has been considerably influenced by significant reduction of institutional support, decreased interest in cooperation of funder and continuously growing demands of providers for co-financing. The impact of value-added tax has a recurring negative effect: more than CZK 8 million. It can be positively assessed that we managed to get involved in various research projects, and thus largely replaced the above revenue shortfalls.

The budget of CZK 193,170 thousand, was created balanced in accordance with Act No. 341/2005 Coll. on public research institutions. The budget was not fulfilled on the side of revenues because of the above described reasons. Consequently, we were forced to make economic measures in various areas, predominantly in the staff area. The staff reduction happened in each research branch where the revenues were not covered and also in operational support branches. The reduction represented 26.2 employees (average registration recounted number) in comparison with previous year. Additionally, some of the not sufficiently productive activities were restricted or stopped. Simultaneously, the supplies and services were reduced predominantly in operational area to necessary minimum securing the operation.

Total outcome of the Institute's activities was represented by the end-of-year result of 1,247 thousand CZK in surplus thanks to all described measures while the budget was decreased of 31 million CZK. Total revenues amounted in 2012 to CZK 163,857 thousand (Fig. 1) and costs reached CZK 162,610 thousand (Fig. 2). The core activity of the TGM WRI, p.r.i., is research; it implies that the majority of revenue came from the core activity. Additional and other activities were carried out on contractual basis. Costs, revenues and the financial result for each activity are accounted separately (Fig. 3).

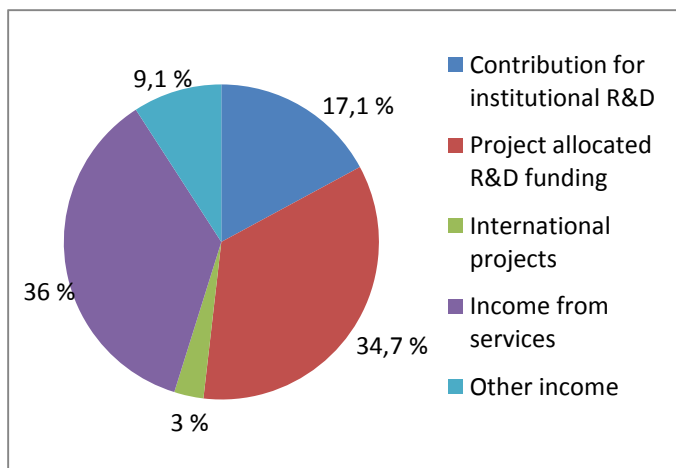


Fig. 1. Revenue structure

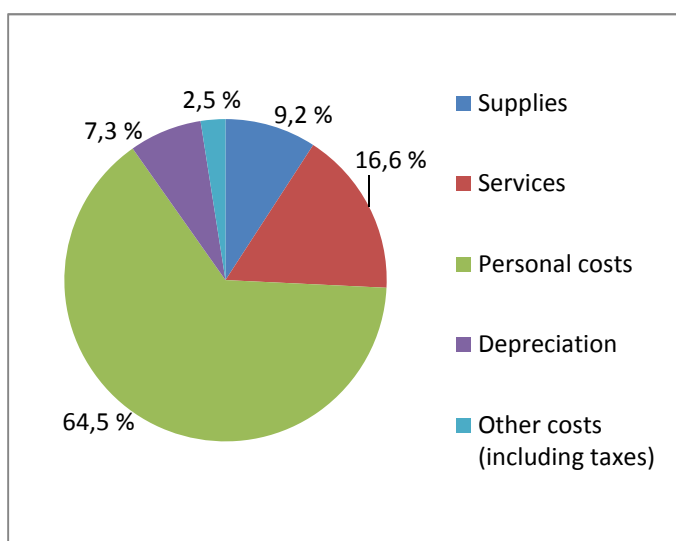


Fig. 2. Costs structure

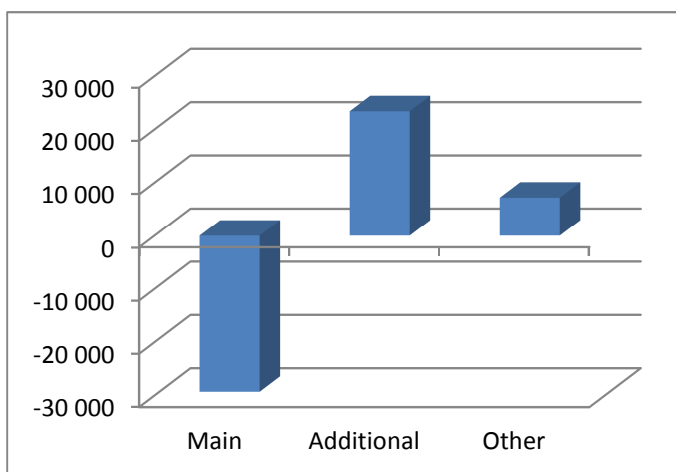


Fig. 3. The structure of the economic result by activity

The Institute put into operation tangible and intangible assets with a total purchase price of CZK 5,307 thousand. Small pieces of property were included in the operative records in the total purchase price of CZK 2,925 thousand. Tangible and intangible assets were excluded from the evidence with a total cost of CZK 7,961 thousand and small pieces of property of CZK 2,743 thousand.

5 Other Requested Information

5.1 Information on measures for elimination of imperfections of management and their fulfillment

No measures for elimination of imperfections of management were assigned.

5.2 Information on things that come to pass after the balance sheet day and are important for fulfillment of the purpose of the institution

No things important for fulfillment of the purpose of the institution come to pass after the balance sheet day.

5.3 Activities in a field of environmental protection

Regarding the fact that the type of activity of the Institute is closely connected with topical environmental issues, its operation is focused primarily on this sector: mainly on research of aquatic ecosystems and their relations in landscape and connected environmental hazards and on issues of waste and packaging management.

The Institute lays stress primarily on care of the environment and permanently sustainable development. This care includes the effort of energy saving. The waste is separated to full extent, vegetation is cared about and other relevant actions take place.

5.4 Activities in employment relationships

It was needed to implement cost saving measures in the field of human resources in 2012, specifically in the reward system. The organizational changes took place, too. These changes had the influence on total employees number. The number of 249.01 employees worked in TGM WRI, p.r.i. (average registration recounted number). The research and expert employees constituted 86% and operational employees constituted 14% of the total employees number. The overview of the structure of the employees after education, age and duration of employment are in Tables 1 to 3.

Table 1. Employees structure according to age and sex – physical state by 31st December 2012

Age	Men	Women	Total	%
Up to 20 years	0	0	0	0
21–30 years	23	13	36	13.58
31–40 years	37	36	73	27.55
41–50 years	24	28	52	19.62
51–60 years	25	41	66	24.91
61 years and more	25	13	38	14.34
Total	134	131	265	100

Table 2. Employees structure according to a length of employment and sex – physical state by 31st December 2012

Duration	Men	Women	Total	%
Up to 5 years	57	40	97	36.60
6–10 years	26	36	62	23.40
11–15 years	29	19	48	18.11
16–20 years	12	16	28	10.57
over 20 years	10	20	30	11.32
Total	134	131	265	100

Table 3. Employees structure according to achieved education and sex – physical state by 31st December 2012

Education level	Men	Women	Total	%
Basic school	1	3	4	1.51
Apprenticeship	8	3	11	4.15
Secondary technical	0	1	1	0.38
Completed secondary general	1	1	2	0.76
Completed secondary technical	25	46	71	26.79
Follow up courses	1	0	1	0.38
University	74	68	142	53.58
Doctoral	24	9	33	12.45
Total	134	131	265	100

5.5 Organizational units abroad

T. G. Masaryk Water Research Institute, p.r.i., has no organizational units abroad. It is a delegate of CR in the Global Water Partnership – Central and Eastern Europe organization.

5.6 Supposed development of the organization in 2013

It is important to note that the year 2013 would be distinctly more challenging than previous years from point of view of winning contracts of all kinds. It is a consequence of cost-saving measures implemented by the government of CR in the frame of economic reform. TGM WRI, p.r.i., will focus its activity on tasks following from its fundamental mission, i.e. mainly on:

- research of aquatic ecosystems and their relations in landscape and connected environmental hazards and on issues of waste and packaging management,
- expert support for the state administration in the field of hydrosphere and waste and packaging management, based on performed research.

The activity of the Institute is focused not only on continuing research projects, grants and commercial projects, but mainly on winning of other projects in the frame of all relevant calls and competitions. The attention is focused on projects financed from the resources of EU and also the national funders supporting the research and development in the sector of water and waste. It's necessary to focus with exceptional intensity on commercial contracts: the only source of financial funds for already absolutely generally requested co-financing in grants.

6 List of Projects in 2012

Title	Project manager	Client
Branch of Hydraulics, Hydrology and Hydrogeology		
Continuous simulation for the estimation of flood frequency within the framework of the GLUE methodology (COST)	Ing. Š. Blažková, DrSc.	Ministry of Education, Youth and Sports
Assessment of present and potential future drought periods in small and middle-sized catchments in the Czech Republic and the Slovak Republic	Ing. M. Hanel, Ph.D.	Ministry of Education, Youth and Sports
Critical source areas of Phosphorus in watersheds	Ing. Š. Blažková, DrSc.	Ministry of Education, Youth and Sports
Proposal of a system for managing emergency situations associated with drought and water scarcity in the Czech Republic	Ing. R. Vlnas	Ministry of the Interior
Sustainable use of water resources under condition of climate change	Ing. A. Vizina	Technology Agency of the CR
Protected areas of surface and groundwater for human consumption: Assessment of raw water quality and its use in practice	Ing. A. Hrabánková	Technology Agency of the CR
Development of a tool and methodology for continuous measurements of snow water equivalent in the field	Ing. A. Kulasová	Technology Agency of the CR
Progressive technology of environment protection and effective water management in small catchments	doc. RNDr. Z. Hrkal, CSc.	GIS-GEOIND – Technology Agency of the CR
The support of long-term planning in water management sector in context of climate changes	Ing. M. Hanel, Ph.D.	Technology Agency of the CR
Securing quality of drinking water supplied to small municipalities from local sources	RNDr. J. V. Datel, Ph.D.	Technology Agency of the CR
Technical assistance in the transposition of Council Directive 2006/118/EC on the protection of groundwater against pollution and deterioration in the Czech Republic	RNDr. H. Prchalová	Ministry of the Environment
Revision of vulnerable zones for the Nitrate Directive including support for reporting	Ing. A. Hrabánková	Ministry of the Environment
The methodology of determination of minimum residual flows	Ing. P. Balvín	Ministry of the Environment
Overview and evaluation of unused hydrogeological boreholes in CR	Mgr. P. Eckhardt	Ministry of the Environment
Convention on the Protection and Use of Transboundary Watercourses and International Lakes – climate changes	Ing. A. Hrabánková	Ministry of the Environment
Evaluation of groundwater bodies status	RNDr. H. Prchalová	State Environmental Fund
Identification and assessment of status of areas delimited according to Article 7 WFD	Ing. A. Hrabánková	State Environmental Fund

Research on adaptation measures to eliminate the impacts of climate change in regions of the Czech Republic	Ing. M. Mrkvičková	National Agency for Agricultural Research
Constraining continuous simulations of flood frequency using mapping saturated areas to constrain prediction uncertainties	Ing. Š. Blažková, DrSc.	Grant Agency of the CR
Evaluation of the risk of landslides and floods from glacial lakes, the Cordillera Blanca, Peru	Ing. P. Bouška, Ph.D.	Institute of Rock Structure and Mechanics AS CR – Grant Agency of the CR
Continuous simulation for flood frequency estimation within the GLUE uncertainty framework	Ing. Š. Blažková, DrSc.	CEH Wallingford
Mathematic modeling of the effects of the Vltava System of Dams on flood events on the Elbe River	Ing. P. Balvín	BFG Koblenz
Transfer of Czech experience with financing of water management to Kyrgyzstan	doc. RNDr. Z. Hrkal, CSc.	UNDP Bratislava
Determination of flow capacity of the weir of the Ružbašská Milava Small Power Station	Ing. J. Šepelák	RFB, s.r.o., Košice
Review of groundwater resources in the Czech Republic – specification of the contractor hydrology work for Activities 2, 4 and 6	Ing. L. Kašpárek, CSc.	Czech Geological Survey
Delimitation of vulnerable zones and economic impact of Nitrate Directive 91/676/EEC implementation in the Croatia	Ing. A. Hrabánková	EKOTOXA, s.r.o.
Operation of the Czech Calibration Station for Current Meters	Ing. L. Ramešová	Joint contract
The study on possibilities of surface water withdrawals in the Úpa River catchment	Ing. A. Beran	Elbe River Board, state enterprise
Model research of the stilling basin floor of the Děčín barrage weir on the section physical model	Ing. O. Motl	Directorate of Waterways
Groundwater balance of the Vltava, the Berounka and the Danube Rivers catchments – part “capacity”	RNDr. H. Prchalová	Vltava River Board, state enterprise
Groundwater balance of the Vltava, the Berounka and the Danube Rivers catchments – part “quality”	RNDr. H. Prchalová	Vltava River Board, state enterprise
Groundwater balance of the Vltava, the Berounka and the Danube Rivers catchments – part “hydrology documentation”	Ing. M. Hanel, Ph.D.	Vltava River Board, state enterprise
Extension of Temelín Nuclear Power Plant – interpretation of criteria of placement a nuclear facility	Ing. A. Vizina	Nuclear Research Institute Řež
Revision of estimations of ensurance of water supply for new nuclear facility at Dukovany Nuclear Power Plant – creation of hydrological documentation	Ing. M. Hanel, Ph.D.	Nuclear Research Institute Řež
Determination of N-year flows at Mšeno Water Reservoir	Ing. L. Kašpárek, CSc.	Elbe River Board, state enterprise
Arrangement of entrance on lands for prepared hydrogeological boreholes	doc. RNDr. Z. Hrkal, CSc.	AQUATEST, a.s.

Reference Laboratory for the Environment Components and Waste		
Investigation of the impact of the Temelín Power Plant accident on contamination of the Vltava and Elbe Rivers as far as border gauging station at Hřensko	Ing. E. Hanslík, CSc.	Ministry of the Interior
Determination of the amount of illicit drugs and their metabolites in municipal wastewater (DRAGON) – new tool for obtaining of complementary data on illicit drugs consumption in the Czech Republic	Ing. V. Očenášková	Ministry of the Interior
New methodological approach to control and evaluation of bathing waters	RNDr. D. Baudišová, Ph.D.	Technology Agency of the CR
Optimization of method for detection of assimilable organic carbon by optic detection	RNDr. D. Baudišová, Ph.D.	Technology Agency of the CR
The support of the Ministry of the Environment in the area of water protection – dangerous substances including reporting	Ing. V. Očenášková	Ministry of the Environment
Guaranteeing of the activity of the permanent and emergency component of Nationwide Radiation Monitoring Network	Ing. E. Hanslík, CSc.	Ministry of the Environment and State Office for Nuclear Safety
Examination of possible impacts of the Temelín Nuclear Power Plant on hydrosphere	Ing. E. Hanslík, CSc.	Ministry of the Environment
Securing of water supply for construction and operation of the Temelín Nuclear Power Plant 1.2.3.4 – study	Ing. V. Očenášková	Nuclear Research Institute Řež
Monitoring and evaluation of the quality of surface water and groundwater and their changes in connection with the influence of the operation of the Temelín Nuclear Power Plant on its vicinity	Ing. E. Hanslík, CSc.	Czech Power Works
Integrated monitoring of the changes in the concentration of radioactive substances in groundwater resources and in water after its treatment	Ing. E. Hanslík, CSc.	ECO-AQUA SERVIS
Concentrations of radioactive substances in the Orlík Reservoir and its tributaries after initiation of the operation of Temelín Nuclear Power Plant (period 2012)	Ing. E. Hanslík, CSc.	Vltava River Board, state enterprise
The evaluation of monitoring of changes in gamma-ray dose increments and the concentrations of radioactive substances in the Nuclear Research Institute Řež locality	M. Novák	Nuclear Research Institute Řež
The research of detection methods and methods of determination of radioactive contamination	Ing. E. Hanslík, CSc.	National Radiation Protection Institute
New nuclear source in Temelín locality including transfer of power in Kočín Substantion	Ing. E. Hanslík, CSc.	Nuclear Research Institute Řež
Expert assessments	Ing. V. Očenášková et al.	Joint contract
Branch of Water Protection and Informatics		
Accuracy classification for existing delimitation of flood plain areas in the Czech Republic, and implementation of the results in delimitation methodology	Ing. H. Nováková, Ph.D.	Ministry of the Interior
The processing of data of flood plain areas delimited from 1 st January to 30 th November 2012	Ing. V. Levitus	Ministry of the Environment

Flood risk management plan	Ing. L. Ansorge	Ministry of the Environment
Creation and maintenance of data sources, support of data and map outputs of the reporting: ICPER, ICPDR and ICPO	Ing. M. Jakš	Ministry of the Environment
The proposition of activities in the field of administration and development of selected data sets of the DIBAVOD (administration and development of the DIBAVOD)	Ing. T. Fojtík	Ministry of the Environment
The management of ISVS-VODA registers and information support of the implementation of combined approach to emission limits assessment	Ing. P. Richter	Ministry of the Environment
The support of the representation of the Czech Republic in activities of the International Commission for the Protection of the Elbe River (ICPER)	Ing. M. Kalinová	Ministry of the Environment
The support of the participation of the Czech Republic in activities of Permanent Committee Saxony and Permanent Committee Bavaria of the Czech-German Commission for Cross-Border Water	Ing. M. Kalinová	Ministry of the Environment
Bathing waters: Expert support of the reporting according to the Directive 2006/7/EC	Ing. H. Grünwaldová, CSc.	Ministry of the Environment
Balance, verification and assessment in the field of protection of water quantity and quality	Ing. J. Dlabal	Ministry of the Environment
Summary information on water in the Czech Republic	Ing. A. Kult	Ministry of the Environment
Emissions and their impact on water environment	Ing. P. Vyskoč	National Agency for Agricultural Research
Jointly used groundwater on the Czech-Saxony border (GRACE)	Ing. M. Kalinová	SAB Dresden
The processing of water management balance of current and projected status of surface water quantity in subbasins of the Upper Vltava, Berounka, Lower Vltava and other Danube tributaries	Ing. P. Vyskoč	Vltava River Board, state enterprise
The revision of the estimations of guarantee of water demand from Power Plant Dukovany, 2 nd phase: Water management solution	Ing. P. Vyskoč	Nuclear Research Institute Řež
The feasibility study of a new nuclear facility in Dukovany: The study on possibilities of increase of water supply from the Vranov Reservoir at current hydrological situation	Ing. P. Vyskoč	Nuclear Research Institute Řež
Branch of Water Technology		
A safety assessment of the emergency infrastructure components – drinking water	Ing. V. Šťastný	CITYPLAN – Ministry of the Interior
Alternative sources of water in municipalities during the state of emergency – exploitation of original local sources	RNDr. J. Fuksa, CSc.	Ministry of the Interior
Research on the intensification of rural and small wastewater treatment plants by non-capital means	Ing. V. Šťastný	Technology Agency of the CR
Final treatment pools used with low intensity	Ing. F. Wanner	Technology Agency of the CR
The research of the optimization and increase of effectivity of wastewater treatment from small settlements using extensive technologies	Ing. E. Mlejnská	Technology Agency of the CR

Registers of point pollution sources and support to the reporting on the performance of the transitional period for the application of Council Directive 91/271/EEC and reporting according to the Articles 15, 16, 17 of this Directive	Ing. E. Mlejnská	Ministry of the Environment
Possibilities for removal of specific pollutants (PPCPs) at wastewater treatment plants	Ing. M. Váňa	National Agency for Agricultural Research
Fungal biofilms for wastewater bioremediation complementary to wastewater treatment plants	Ing. F. Wanner	Grant Agency of AS CR
Activities of the Testing Laboratory for Water Management Facilities	Ing. V. Jelínková	Joint contract
Sampling courses	RNDr. J. Fuksa, CSc.	Joint contract
Brno Branch of the Institute		
Drying out of streams during climate change: Prediction of risk and biological indication of drought periods as new methods for water resources and landscape management	RNDr. P. Pařil, Ph.D.	Technology Agency of the CR
The anaerobic separator of suspended solids and nutrients	Ing. H. Hudcová	ASIO – Technology Agency of the CR
Identification of significant areas with cultural and historical values threatened by natural and anthropogenic stresses	Ing. M. Forejtníková	Ministry of Culture
Transposition of EU Directive on the assessment and management of flood risks	Ing. K. Drbal, Ph.D.	Ministry of the Environment
Expert support of the Czech Republic's participation in the International Commission for the Danube River Protection	Ing. S. Juráň	Ministry of the Environment
Cooperation with the Slovak Republic on transboundary waters	Ing. S. Juráň	Ministry of the Environment
Cooperation with Austria on transboundary waters	RNDr. H. Mlejnková, Ph.D.	Ministry of the Environment
Technical assistance in implementation of Convention on the Protection and Use of Transboundary Watercourses and International Lakes (WGMA)	Ing. S. Juráň	Ministry of the Environment
Specialized internship for experts of the State Meteorological Service of Moldova	RNDr. D. Němejcová	Ministry of the Environment
Potential flood damages and hazards in the Lower Morava River and the Lower Thaya River Basin – International CEframe project (work package 4)	Mgr. P. Štěpánková, Ph.D.	Ministry of the Environment
Information platform for cultural landscape	Ing. H. Hudcová	Mendel University Brno
The perspectives of landscape management – innovation of landscape disciplines	RNDr. D. Němejcová	Mendel University Brno
Flood Protection Education and Research Centre	Mgr. P. Štěpánková, Ph.D.	Masaryk University Brno
Methodology of assessment of biological component "benthic invertebrates" for big unfordable rivers	RNDr. D. Němejcová	State Environmental Fund
Assessment of agricultural land in the areas of extinct fishpond systems with the aim of supporting sustainable management of water and soil resources in the Czech Republic	Ing. M. Rozkošný, Ph.D.	National Agency for Agricultural Research

ETZ Project: "Polder confluence – Renaturierungskonzept"	Ing. M. Forejtníková	Via Donau – Österreichische Wasserstraßen-Gesellschaft
The reviews of hydraulic calculations (1 st phase) in the frame activity "Creation of flood risk and flood hazard maps for the Morava River and the Thaya River Basins"	Ing. L. Chlubna	Pöyry Environment
Monitoring of the impact of Dukovany Nuclear Power Plant on quality of water in the Jihlava River	RNDr. H. Mlejnková, Ph.D.	Czech Power Works
Implementation of Natura 2000 network in the area administrated by Nature Conservation Agency of the Czech Republic	Mgr. J. Kroča	MOTT MACDONALD Praha
Ostrava Branch of the Institute		
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Support to the participation of the Czech Republic in the activities of the International Commission for the Protection of the Odra River against Pollution	Ing. L. Trdlica	Ministry of the Environment
Cooperation in transboundary waters with Poland	Ing. L. Trdlica	Ministry of the Environment
Centre for Waste Management		
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Innovation and extension of teaching focused on environmental issues at Faculty of Science of the Masaryk University Brno	Ing. D. Sirotková	Masaryk University Brno
Branch of Applied Ecology		
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Development of system for automatized monitoring of influence of water on environment using technology of passive integrators TROVAN	Ing. P. Horký, Ph.D.	Technology Agency of the CR
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The methods of optimization of the proposed measures in watersheds of reservoirs leading to effective decrease of their eutrophication	Mgr. P. Rosendorf	Technology Agency of the CR
Numerical and functional analysis of aquaculture sector including recreational fishing focused on increase of competitive ability of the Czech Republic and improvement of status of water ecosystems	Ing. J. Musil, Ph.D.	Technology Agency of the CR
Intercalibration and related activities	Mgr. M. Maciak	Ministry of the Environment
Methodology for improvement of a throughput of transverse obstacles on rivers in CR	Mgr. O. Slavík, Ph.D.	Ministry of the Environment

Methodology for determination of reference conditions for individual components of biological quality	Mgr. L. Opatřilová	State Environmental Fund
Methodology of evaluation of ecological potential of HMWB and AWB – category river	Mgr. L. Opatřilová	State Environmental Fund
The evaluation of technical reports of pilot projects of Operational Programme Fishing	Mgr. O. Slavík, Ph.D.	Ministry of Agriculture
Evaluation of projects of applicants for grants from Operational Programme Fishing 2007–2013	Ing. J. Musil, Ph.D.	Ministry of Agriculture
Monitoring of catadromous migration of the european Eel (<i>Anguilla anguilla</i>)	Ing. J. Musil, Ph.D.	Ministry of Agriculture
Assessment of soil erosion and Phosphorus loads causing eutrophication of stagnant water bodies	Mgr. P. Rosendorf	National Agency for Agricultural Research
Monitoring and whole-area mapping of species of European importance as a base for finishing of draft of the Natura 2000 network in CR	Ing. K. Douda, Ph.D.	Agency for Nature Conservation and Landscape Protection of the CR
Study on possibilities of construction of big energy source in the Blahutovice locality	Mgr. P. Rosendorf	Nuclear Research Institute Řež
The revision of the estimations of the guarantee of water demand from Dukovany Power Plant, 3 rd phase: Water quality assessment below the Mohelno Reservoir	Mgr. P. Rosendorf	Nuclear Research Institute Řež
Water quality model of the Jihlava River within Dalešice Reservoir watershed	Mgr. D. Fiala	Pöyry Environment, a.s.
Monitoring of the macrophyte community threatened by rafting in the Warm Vltava (section of the Vltava River)	Mgr. O. Simon	Protected Landscape Area Šumava
Update of simulation model of surface water quality and its adaptation to new legislation in subcatchments of the Upper Vltava, Berounka, Lower Vltava and other Danube tributaries	Mgr. P. Rosendorf	Vltava River Board, state enterprise
Bioindication tests of the effectivity of management measures in the catchments with occurrence of <i>Margaritifera margaritifera</i>	Mgr. O. Simon	Gammarus, s.r.o.
Influence of pollution on bivalves – joint contract of the Branch	Mgr. O. Simon	Naturservis, s.r.o., Geovizion, s.r.o., and other
Special water quality monitoring in the catchment as a base for the care plan	Mgr. M. Bílý, Ph.D.	Naturservis, s.r.o.
ASLAB Centre for Assessing Proficiency of Laboratories		
Good laboratory practice	Ing. P. Finger	Ministry of the Environment
ASLAB accreditation	Ing. R. Dvořák	Joint contract
Courses – good laboratory practice	Ing. P. Finger	Joint contract

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