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Water quality accounts path to water price policy. Water quality accounting in the Republic of Moldova & provisional results in the WQA case study

1. Obvious importance of water quality accounting concerned water quality influences the cost of supplying domestic water and the extent to which finished water quality affects household water demand from price impacts. Direct affect water quality on municipal water price and residential water demand and implications for water supply benefits. Account social dimensions as household's income, employment rate, guarantying access to safe drinking water, water suppliers need achieving better water quality at lower cost (water quality trading) due political commitments on water resource (WFD, Conventions, Treats)

Water quality accounts study in Moldova bringing together various sources of information on water has demonstrated:

- awareness of lack of consistency among the different data sets and poor quality of data (the accounting framework is an important tool for checks and balances);
- need using common definitions and classifications;
- identification data gaps and efforts to improve data coverage (e.g. using various techniques-modelling);
- many analyses can be done with the water accounts (combining different sources of information , for example geo data, water price survey data which operate and use in water basin management Artois-Picardie Water Agency, France);
- better meet users' demand.

2. Since October 2006, with technical support Artois-Picardie Water Agency (France) has been starting water price survey in Moldova. In 2004 water price survey carried out in the territory Artois-Picardie river basin has accounted quality water in river thought human pressure (economic & households) and

assessed cost of response (billing, investment, price, social cost) (example Water price survey, Agence de l'Eau Artois-Picardie, France, 2004)

Main conclusion has done in water price survey: assessment and localisation households where water bill in available income is more than 3% correlated to water quality in rivers:

3. Water quality accounting is multi-disciplinary and integrates statistics, science, engineering, policy, and economics. Stakeholders in a water accounts include industries, wastewater treatment plants, local businesses, farmers, municipalities, environmental NGOs, government officials, and citizen groups.

4. Experience implementing water quality accounts in Moldova and achieved provisional results.

4. 1. Since the independence Moldova has been active at the international level, participating in the negotiations of UNECE and world environmental conventions and developing regional cooperation on the basis of various bilateral and multilateral agreements. Ratifying in June 1993, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Republic of Moldova has showed its commitment in implementing the provision of this convention: “ to prevent, control and reduce water pollution that can produce harmful effects in other countries, to manage the trans boundary waterways in a rational, ecologically healthy and equitable way, and to assure the conservation and, if necessary, the restoration of aquatic water tables; the necessity purposed ways and means of co-operation between States for surveillance, research, and exchanges of information for alert systems and public information.”

Later two regional conventions and their future protocols are also of importance for the cooperation on transboundary waters: UNECE Convention on the Transboundary Effects of Industrial Accidents and the UNECE Convention on Environmental Impact Assessment in a Transboundary Context.

Considering the strategic orientation of Moldova towards economical integration with **European countries**, it is necessary to begin the process of harmonisation the national legislation with that of the EU. The EU Water Framework Directive is an important addition to the legal framework even if is not legally binding for Moldova.

At the regional level the international cooperation is based on bilateral agreements in the fields of environmental protection signed by Romania, Ukraine and Belarus.

In 1994, an important event of Moldova implication into international cooperation was the signing of the Convention of Cooperation for the Protection and Sustainable Development of the River Danube and became membership an International Commission for the Protection of the Danube, while since the March 2006 Moldova has taken governance for one year.

Also in 1994, the Agreement the Joint use and protection of transboundary waters has signed by the Government of the Republic of Moldova and the Government of Ukraine. This agreement refers to the rivers Nistru and Danube, having the area of application all surface waters and ground waters, which form or cross the frontier of these two countries. The application field is **qualitative** and **quantitative** protection of water resources, regulating, water supply, flood and other water management activities.

There are over legal and regulatory acts in Moldova deal in general terms with the full water quality issues; naming specifically Law on environment protection (1993), Law on Sanitary-Epidemiological well-being of population(1993), Law on Ecological expertise and environmental impact assessment (1996), National Strategy of economic growing and reduction of poverty, National Program “Moldavian village”, National Program on Water Supply and Wastewater treatment for the settlements, National Strategy and Action Plan of the Conservation and Sustainable Use of Natural resources, Framework of national policy in water resources domain (2003).

4.2. In April 2005 has taken place the continuation activities regarding the consolidation Water Data Centre in Moldova with focus to the producing water quality accounts due the SEEA methodology. Its is supported by the French Government within the COCOOP funding, the operator this project is BETURE-CEREC Consulting company (France) with main beneficiary Ministry of Ecology and Natural Resources of the Republic of Moldova.

4.3. In Moldova, there are several laboratories, centres, institutions and departments, which are involved in surveillance and monitoring waters quality. **State Ecological Inspectorate** is in charge of compliance monitoring and pollution control, mainly focused in the analysis of pollutants in wastewater discharges and near pollution sources. There are four laboratories equipped with modern detectors. It is under supervision of the Ministry of Ecology and Natural

resources and its functions have performed through its territorial subdivisions: Ecological Agencies Centre, fishery Inspection and other specialized control services.

The State Hydro meteorological Service monitors background air, water and soil quality to assist in the formulation of pollution control measures. It has certified laboratories for water and soil analyses, which regularly participate in international quality assurance and quality control schemes. It has a comprehensive network of sampling station covering all major water courses and water bodes and monitors a range of some 70 parameters.

The Ministry of Health is responsible for monitoring in relation to human health and has extensive well equipped and staffed network of regional laboratories in the Centre for Preventive Medicine carrying out a significant number of analyses of drinking water, surface and ground waters; foodstuff, etc.. It has central and local territorial laboratories in each regional subdivision.

The State Geological Agency is in charge of compliance monitoring and control ground waters; there are around 1,8 thousand wells.

4.4. Water pollution sources are categorized as point and non-point. The point sources discharges of municipal and industrial wastewater have known and supervised and their pollution load can be quantified as well as there is a need to monitor. Therefore annual reporting information are gathering on the basis of questionnaires to the State Water Agency “ Apele Moldovei”, containing quantitative data about water withdrawal, use, losses, discharge, activities sewage systems and the waste treatment plants, substances discharged with sewage for 56 polluting ingredients. Around 2 thousand have surveillance coverage.

Economic data regarding activities municipal water suppliers (wastewater treatments plants) have collecting and treating by National Statistical Bureau.

On the other side, non-sewerage dwellings, agriculture fields, industrial sites, waste dumps have none organised character, therefore impact of this pollution difficult to control and monitor. Assessment of households' pollution to water resources has done within House Budget Survey in 1999 and 2000.

Nowadays when there are new innovations and existence of use new sources of information are possible to use in the way to progress in such kind of assessments, mainly to use spatial images and set up water pollution sources: industrial or municipal entities, cities, polygons..

4.5. Benefits WQA study:

1) Compute water quality indicators representing it are in understandable views to public and to politicians (tables, graphs, publications) as well as modern way in water data management

2) Water resources diagnostic in quality localising pollutions points and identifying environmental risk places

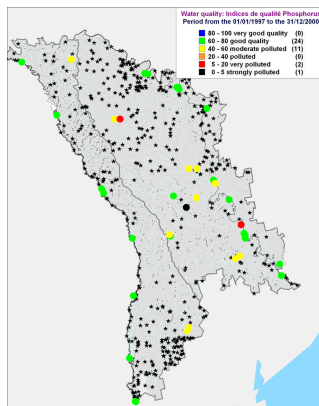
Maps have demonstrating trends in declining watercourses pollution, especially along the major trans boundary rivers Prut and Nistru. The main reasons are downing activities in agriculture and water supply.

Otherwise still are remaining several regions where index of pollution is quiet high in the rural areas.

Inventory of pesticide in 2002 identifying in these places location of old stockpiles.

3) Provisional water quality classes assessment what become the first step to the water quality accounts:

4) Approach in to integrated assessment of waters quality: starting river quality combined to economic and social background assume capacity of habitants in acceptance water price policy and cost water management as well as vulnerability investments in waters:



4.6. Integrated assessment

Gathering patches information produced by different actors characterizing various aspects in status waters it brings together stakeholders and water politicians. Within the project had been collected databases containing primary data, which have introduced into the NOPOLU System. The NOPOLU is basing on the principal “beehive” when a data holder is fulfilling his own field keeping common principals in various codification surveillance entities including related to the GIS data (waters, administrative, boundary, vegetation, etc...). System has built on two software’s Access and MapInfo, quiet known product giving flexibility to stakeholders and data users.

4.7. Problems in WQA project:

Implementing project regarding Quality Water Accounts has faced:

– Geographical bases of catchments to be throughout enhanced: catchments and rivers data layer not suitable in effective exploitation of data

- awareness of lack of consistency among the different data sets and poor quality of data (the accounting framework is an important tool for checks and balances)
- identification of data gaps and efforts to improve data coverage
- multi institutional involvement at national & international
- recognition by policymakers
- institutional capacity

5. Perspectives water quality accounting and water quality accounts:

- ✓ Political: reinforce networking and data sharing
- ✓ Technical: design production strategy that encompasses technical gaps.
 - ✓ « boost » classical reporting on water quality;
 - ✓ Launch flux calculations ;
 - ✓ Prepare operational catchments layers (towards sectoral assessment, impact, exposure);
 - ✓ Organise resources accounts strategy ;
 - ✓ Middle term: water quality accounts (river stretches to be defined!);
 - ✓ Implementation water price survey

Literature:

1. Technical reports of the project "Consolidation Water data centre in Moldova", BETURE-CEREC, France, 2005, 2006
2. National Report on the role of ecosystems as water suppliers in the Republic of Moldova, Ministry of Ecology and Natural Resources of the Republic of Moldova, 2004
3. Arnaud Courtecuisse, Agence de l'Eau Artois-Picardie " Outputs of the EU WFD economic analysis and its role in the decision process: illustration from the Artois-Picardie river basin , Water price survey, 2006