WMO-GWP projects in Dniester basin

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GWP Vision: A Water Secure World

GWP Mission: To advance governance and management of water resources for sustainable and equitable development.

GWP Core Values: Neutrality, inclusiveness, openness, integrity, accountability, respect, gender sensitivity, and solidarity
Strategic Approach

GWP's vision: A Water Secure World

GWP's mission: To advance governance and management of water resources for sustainable and equitable development

Goal 1: Catalyse Change in Policies and Practice

Goal 2: Generate and Communicate Knowledge

Goal 3: Strengthen Partnerships

Cross-cutting strategic issue: Youth engagement

Cross-cutting strategic issue: Gender equity

Climate Resilience & Water Security

Energy & Water Security

Urbanisation & Water Security

Ecosystems & Water Security

Transboundary Water Security

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GWP believes in:

- Adaptation to climate change is mainly about better water management (UN-Water)
- Better water management is IWRM/RBMP
- Integrated Water Resource Management is the coordination of activities in pursuit of a set of **common goals** for water resources development and maintenance
Integration of targets in RBMP

• RBMP is an obligation of results/reaching targets (and not any more only an obligation of means/measures)
• IWRM is in setting common Targets and Measures to achieve them

Targets in the WFD + Flood Directive:
• Water Quality targets (not just compliance with MACs)
• Decrease of flood risk/damage targets (not just compliance with Q1% design flood standard)
• Decrease of drought risk/damage targets
THE WATER BASIN COMMITTEE

- local councillors
- anglers
- farming managers
- water sports associations
- tourists associations
- nature conservancy associations
- sand and gravel companies
- drinkable water consumers
- manufacturers
- farmers
- irrigation managers
- hydroelectric energy producers
- hydraulic managing companies
- government representatives
- etc...

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Why modeling used by policy makers?

• Modeling helps to achieve acceptance for environmental policies and successful implementation, as well as methods that calculate the expected and achieved effect of a measure.

• Decision makers and stakeholders benefit from the ability to run scenario simulations for optimal measure allocation to improve, for example, water quality in a catchment or flood protection.

• Integrating and testing of alternative management strategies, as well as judging their general feasibility and acceptance, are important steps in management.

• Scenario analysis ask for a predictive model, which should be process-based and thus, normally is linked to a hydrological model for description of the transporting medium (i.e. water flow).
Сучасний Integrated Water management

- Сучасний Water management, at its core, is about reducing or avoiding water risks and about distribution of the water risks that remain – that is, who bears the risk.
- Policy responses to managing water risks can also transfer risks to others or defer them into the future. policy intervention may increase other water risks
- Current policies often fail to recognize unintended effects (“externalities”) and to address these trade-offs between water risks.
- A risk-based approach addresses water security first and foremost by determining acceptable levels of each of the four key water risks in terms of their likelihood and the potential consequences (economic, environmental, social), and balancing this against the expected benefits of improving water security.
Водная безопасность: что такое риск?

• Риск описывает вероятность и последствия неопределенного события, вероятность которого можно надежно оценить.
• Риск находится на пересечении угрозы (вреда), воздействия и уязвимости:
• Риск = (угроза)·(влияние), где (влияние)·(воздействие)·(уязвимость).
Water security: what is risk?

- Achieving water security objectives means maintaining acceptable levels for water risks.
- Risk is at the intersection of hazard, exposure and vulnerability: risk = (hazard) \times (impact) , where in turn (impact) = (exposure) \times (vulnerability)
- The reduction of any one of the three factors to zero eliminate the risk.
Risk management as the mechanism of integration

• Фундаментальний зсув в розумінні водної безпеки
• Досягнення водної безпеки з управлінської точки зору визначається, як дотримання прийнятих рівнів чотирьох водних ризиків:
  1. Ризику недосягнення належної якості води,
  2. Ризику підриву стійкості прісноводних екосистем,
  3. Ризику внаслідок браку води (у тому числі посух),
  4. Ризику внаслідок надмірної кількості води (повеней/паводків).

• Такий підхід дозволяє порівнювати внесок кожного з ризиків в загальний ризик, управляти скороченням або уникненням водних ризиків і розподілом тих ризиків, які залишаються. Стратегічні підходи до управління водними ризиками також можуть переносити ризики на інших або відкласти їх у майбутнє. Втручання політики може збільшити інші водні ризики.

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Risk management as the mechanism of integration

**Figure B:** The role of natural hazards, exposure and vulnerability in disaster risk

Disaster risk is determined by the occurrence of a natural hazard (e.g., a cyclone), which may impact exposed populations and assets (e.g., houses located in the cyclone path). Vulnerability is the characteristic of the population or asset making it particularly susceptible to damaging effects (e.g., fragility of housing construction). Poorly planned development, poverty, environmental degradation and climate change are all drivers that can increase the magnitude of this interaction, leading to larger disasters.

Source: Adapted from IPCC, 2012.
Від концепції нульового ризику – до управління ризиками

• все більше осіб, що приймають рішення, усвідомлюють, що абсолютної безпеки не буває, можна говорити лише про більшу чи меншу безпеку, тобто використовувати для визначення безпеки компаративний принцип.
• концепція нульового ризику це й є поняття абсолютної безпеки.
• В разі якості води – це поняття ГДК, нижче яких вважається, що все безпечно, а вище – все небезпечно.
• В разі боротьби з повенями, це так званий рівень однопроцентного паводку, коли вважається, що паводок з вірогідністю 1% - безпечний, а менше одного відсотка – небезпечний.
• В разі стійкості водних екосистем, таким стандартом чи критерієм в Європі слугує Індекс експлуатації води (повний водозабір по відношенню до річних наявних ресурсів).
Що таке ризик?

- Ризик має розумітися в його математичному розумінні – як добуток загрози, експозиції та вразливості:

  \[ \text{risk} = (\text{hazard}) \times (\text{impact}) \], де \( (\text{impact}) = (\text{exposure}) \times (\text{vulnerability}) \)

  ризик = (небезпека)х(вплив) ,
  де (вплив), в свою чергу, = (експозиція)х(вразливість)

- Зменшення будь якого з цих трьох множників до нуля – усуває ризик і таким чином зменшення кожного з трьох множників має розглядатися рівноправно в програмах по зменшенню ризику.

- Наприклад, протипаводкові програми не мають обмежуватися лише пропозицією заходів по відновленню рівнів однопроцентних паводків, тобто зменшенню небезпеки, а одночасно пропонувати і аналізувати інші заходи, що зменшують вплив паводку шляхом зменшення експозиції (наприклад, відселення з зон затоплення) або вразливості (наприклад, краще інтегроване екологічне планування).

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Risk = Q0.1% x $0.1M = Q1% x $1M

Do not accept the risk

Unacceptable risk

Accept the risk

Risk = (hazard)x(impact)
GWP operational strategy for building climate resilience through water security (Goal 2)

Better climate information

- Climate Adaptation
- Disaster Risk Reduction
- Water Security

GWP’s approach:
- Work with UNFCCC and the COPs (global level)
- Focus on the extreme events: building the integrated flood management and integrated drought management programmes (with WMO) (regional level)
- Integrate National Adaptation Plans (NAPs) with IWRM plans, and build these into national development planning (country level)
WMO/GWP Associate Programme on Flood Management (APFM)

- From reactive to **pro-active** approaches;
- From Ad-hoc to **Integrated Flood Management**
- Towards a **culture of prevention** by managing flood risk & living with floods;
- **Balancing flood risk** and achieving sustainable development needs;
- **Change in decision making processes** to include risk management approaches.

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WMO/GWP IDMP approach

1. To shift the focus from reactive to proactive measures through drought mitigation, vulnerability reduction and preparedness;
2. To integrate the vertical planning and decision making processes at regional, national and community levels into a multi-stakeholder approach including key sectors, especially agriculture and energy;
3. To promote the evolution of the drought knowledge base and to establish a mechanism for sharing knowledge and providing services to stakeholders across sectors at all levels;
4. To build capacity of various stakeholders at different levels.
Central & Eastern Europe (CEE)
Integrated Drought Management Programme (IDMP)

- joint WMO/GWP global IDMP programme
- 10 CEE countries
- more than 40 organizations

Policy advice + practical experiences

Elements of the CEE IDMP Programme:
- Policy advice
- Demonstration projects
- Capacity building & knowledge management
- Regional cooperation & transnational integrated approach

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Our favorite low/no regret measures include:

- Early warning systems
- Risk management by flood/drought modeling/mapping
- Risk communication between science, decision makers and local citizens
- Water demand management
WMO-GWP-?-? TRANSBOUNDARY FLOOD MANAGEMENT IN THE DNIESTER RIVER BASIN IN MOLDOVA AND UKRAINE Project proposal

I. Catchment modelling and mapping

- Collection of topographic and hydrographic data
- Statistical analysis of flood patterns under various scenarios
- Hydrological & hydraulic modelling and flood risk mapping
- Use of these methods for the selection of the most effective measures in selected areas
- Training of staff on the above topics
- Product development
- Dissemination of product and result outcomes to basin stakeholders
III. Strengthening the use of flood information

• Training of institutions to the effective use of flood information and the use of guidelines on flash flood management and local warning systems, and local stakeholders in disaster preparedness and use of flood-related information

• Establishment of communication standards and channels with local media and communities

• Press conference and development of proposal for training of basin media in covering flood-related issues
Thank you!
Water Framework Directive cycle vs ex-Soviet cycle

- Water status assessment
- Identification of measures
- Objectives definition
- Programmes of measures

River basin management plan

2009 ...

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CEE IDMP Challenges ...

- helping countries to **improve national drought monitoring and management policies** (DMP) – to increase preparedness and reducing drought impacts;
- **raising awareness** about severe drought conditions through efficient dissemination mechanisms;
- combining / joining already existing **drought platforms for exchanging drought data**, relevant for drought detection and monitoring;
- **demonstrating concrete measures** that can be later used in drought management policies in different sectors;
- **sharing knowledge and best practices** among countries.

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O1: Investments in regional and national development

O2: Innovative Green Solutions

O3: Knowledge management and capacity development

O4: Partnership and sustainability

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O1: Investments in regional and national development

WP1: Regional and Transboundary Cooperation

- Act. 1.1: Cooperation with international basin commissions and regional organizations
- Act. 1.2: Review of the current status of the implementation of DM plans and measures within RBMP according to EU WFD
- Act. 1.3: Drought information exchange Platform

WP2: National planning processes

- Act. 2.1: Guideline for Drought Management Plan
- Act. 2.2: National Consultation dialogues

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5.1: Increasing soil water holding capacity
5.2: Drought impact on forest ecosystems
5.3: Natural small water retention measures
5.4: Drought Risk Management Scheme
5.5: Remote sensing agricultural drought monitoring methods
5.6: Agricultural drought monitoring and forecasting
O2: Innovative Green Solutions: 5.6: Agricultural drought monitoring and forecasting

Partnership
• Moldova: GWP Moldova; Soil Research Institute
• Ukraine: HydroMetCentr of Ukraine; GWP Ukraine; State Agency of Water Resources

OUTPUTS
• Long term climatic –agro data analysis
• Review and mapping new climate-zoning of Ukraine and Dniester River Basin territory
• Pilot: on upgrading forecast models of crop yield losses caused by droughts and development of remedial measures practices
• Awareness rising on droughts management for decision makers and farmers: publications, recommendation, workshop, NPDs

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WMO-GWP INTEGRATED DROUGHT MANAGEMENT PROGRAMME: Moldova-Ukraine project

Expected Result:

• Authorities and stakeholders’ awareness on upgraded climate zones, main climate change trends and drought adaptation measures development in agro sector will be raised at national level as the basis for drought management planning as a part of Dniester River Basin Management Plan.
WMO-GWP INTEGRATED DROUGHT MANAGEMENT PROGRAMME: Moldova-Ukraine project

• Moldavian counterparts will present mapping of the soil moisture as a function of erosion.
• Ukrainian counterparts will analyse long-term data on water holding capacities for main types of soils in Ukraine and development of the monitoring system on agro and droughts.
• Forecast instruments and practices for better evaluation of droughts effects and drought adaptation measures will be updated and developed, including assessment of the possible crop yield losses due to droughts for main crops (winter wheat and spring barley plus one new main crop).
Interim observations:

- Nonsymmetrical warming especially in winter and summer months. Average annual temperature increase more than 0.8°C. Temperature increase in cold period is in average 1.35°C, in warm period – 1.1°C.
- Soil moisture reduction in May by 10-20%.
- Average annual precipitation quantity in Ukraine has no changes.
- There are substantial changes in the precipitation distribution during year. In winter there is a 20% decrease, in summer the precipitation has increased by 5-15%.
- There is no positive effect of precipitation increase in summer time because of intensive increasing of air temperature at the same time.
- Return period of 50-year flash floods is getting to decrease by 10-15% with no substantial changes in annual flow.
- Droughts in Dniester basin are going to last longer.