D.T3.4.3 - NATIONAL LEVEL POLICY RECOMMENDATION

DISCUSSION PAPERS IN EN & NATIONAL LANGUAGES

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Sommario

INTRODUCTION

A policy recommendation is simply written policy advice prepared for some group that has the authority to make decisions, whether that is a Cabinet, council, committee or other body. Policy recommendations are in many ways the chief product of the ongoing work of government managers to create and administer public policy. Policy recommendations have a lot in common with briefing notes. Like a briefing note, a policy recommendation serves to inform senior decision-makers about a policy issue. However, a policy recommendation document goes further than a briefing note, providing both a more in-depth analysis of the options and a policy recommendation. Policy recommendations are the key means through which policy decisions are made in most levels of government. Whether the policy recommendation is accepted as sound advice or dismissed in favour of another option largely depends on how well the issue and the arguments justifying the recommended course of action are presented.

1. Collecting Relevant Data, Defining Existing Gaps, Key Stakeholders and Enablers

1.1. Step 1 - Mapping

1.1.1. Policies - water recycling

Rome metropolitan area adopted some guidelines to correctly manage the water recycle. The main aspects included in this document are (a) water saving, (b) wastewater reuse, (c) greywater reuse, and (d) rainwater reuse. The document addresses wastewater reuse for green areas, car washings, paved areas, supplying wc, and so on, and it underlines the necessity of different treatment processes based on the final use (but no chemical or physical parameters are specified). About greywater, it recommends the separation between grey and black water network, the treatment and reuse of purified greywater, and two different supply networks (one for potable and one for recycled water). Finally, it recommends the adoption of a tank to collect rainwater and reuse it after treating it. The document refers specifically to roof water and proposes an efficient system of filtration for treating the water.

http://www.provincia.rm.it/regolamentoedilizio/allegati/tecniche/contenimento_consumi_idrici.html

1.1.2. Policies - use of rainwater, stormwater runoffs, water scarcity alleviation

The municipality of Reggio Emilia released several guidelines on rainwater management in 2014. The purpose is to limit the superficial rainwater flow, increase water infiltration, and facilitate water collection and rainwater reuse. In the document, several techniques, named after Best Management Practices, are recommended in order to damp the stormwater flows. Specifically, they concern infiltration systems about (a) roof water (i.e. green roofs), (b) road and parking water (i.e. permeable pavements), and (c) flow water in urban area in general.

https://www.comune.re.it/retecivica/urp/retecivi.nsf/PESIdDoc/CD5BC2C6780B17A5C1257CDA0040BAA0/$file/Linee%20guida%20per%20la%20gestione%20delle%20acque%20meteoriche.pdf

The Emilia Romagna region adopted some guidelines on designing rainwater collection systems. It is divided essentially in two parts: the first one gives methods and data to evaluate volumes to design collecting systems in order to satisfy safety and reuse necessities; the second part is about possible rainwater collecting systems to use.

https://ambiente.regione.emilia-romagna.it/it/suolo-bacino/sezioni/atti-amministrativi/norme-e-atti/autorita-bacino-reno/direttive/direttiva-sicurezza-idraulica-pianura/linee-guida-raccolta-delle-acque-piovane-e-controllo-degli-apporti-pianura

Rome metropolitan area guidelines also refer to rainwater reuse in order to decrease the potable water consumption. The possible final reuses are for private green areas, heating centralized systems, washing machine, WC, and air conditioning systems.

http://www.provincia.rm.it/regolamentoedilizio/regolamento/normativa/contenimento_consumi_idrici.html

1.1.3. Laws and regulations - water reuse

The Italian DM 2003/185 presents technical standards for domestic, urban, and industrial water reuse based on the final purpose. The final aim of this directive is to safeguard quantitatively and qualitatively the water

resource and to limit the usage of superficial and underground water. The end uses allowed by the regulation are:

- Irrigation: both for agriculture and for watering green areas for sportive or social activities.
- Civil: washing urban streets, supplying heating or cooling systems, domestic usage (not drinkable water).
- Industrial: supplying fire network, washing, industrial thermic cycle.

In case of irrigation and civil usage, recycled water must have chemical-physical properties at least equal or below parameters contained in attached 1 of the normative. For industrial reuse, the interested parts can agree on specific limits according to the procedure required by the industry.

Regions must define water treatment plants and type of supply networks to use for the recycling process and the linking infrastructure to the supply network.

The supply recycled water networks and supply drinkable water networks must be separated and built so that there are no risks to have contamination of the network for human consumption.

The irrigation reuse cannot be more than the required by the green areas or agricultural purposes.

https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2003-07-23&atto.codiceRedazionale=003G0210

In 2020, the European parliament and the council approved the regulation 2020/741 concerning the reuse of the urban wastewater for agricultural irrigation which will enter into force in 2023.

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R0741

1.1.4. Laws and regulations - rainwater collection

Rainwater collection and use is not yet regulated at a national level in Italy. Some Regions issued rules and guidelines to govern rainwater harvesting and use in their territory.

- Abruzzo Regional Law n.17, 24 November 2008
- Lazio Regional Law n.6, 27 May 2008
- Lombardia Regional Rule Book, 24 March 2006 and 29 marzo 2019 , n. 6
- Toscana Regional Decree n.2/R, 9 February 2007
- Trentino Alto Adige Provincial Law n.1, 4 March 2008
- Umbria Regional Law n.17, 18 November 2008
- Veneto technical rules for the implementation of the water protection plan. DCR n. 107, 5/11/2009 update in July 2018.

The Law in Umbria is at present the most advanced and detailed in Italy, promoting rainwater use and defining technical criteria.

The Regional Law n.17, 18 November 2008, released by Umbria Region regarding environmental sustainability of urban and building operations contains some rules about rainwater collection and reuse in article 9. Rainwater coming from roofs can be collected and reused both for public and private purpose. Specifically, it can be reused for public and private green areas maintenance, fire network supply, car washes, and domestic usage but according to USL (local sanitary company) opinion. In case of new buildings or urban maintenance of existing buildings, collection and reuse of rainwater is compulsory if the surface cover of the building is more than 100 m2 and if the surface of green area to water concerning the building is more than 200 m2.

http://www.crumbria.it/mostra_atto_stampabile.php?file=LR2008-17.XML&xml=&datafine=20090630

1.1.5. Laws and regulations - green permeable surfaces

At the national level, a law on soils sealing reduction and regulation is expected from many years. At present, a draft law proposal is under discussion in the parliament. (DDL S. 193, 09/05/2021, “Misure per il contenimento del consumo del suolo e il riuso del suolo edificato”).

At present some Spatial planning acts are ongoing but there are no indications regarding green permeable surfaces, soil sealing, green roofs, etc. The most important is the law n. 1150 del 1942.

Every region has specific laws and regulations regarding spatial planning.

Lombardy Regional Law n. 31, 28 November 2014, introduces new prescriptions in the territory governance, aiming at reduce new soil sealing and at favour the regeneration of sealed soil.

The main goal of the law is to address every urban planning towards renewal of existing buildings and a better use of sealed soil area, to safeguard natural and semi-natural soil.

http://normelombardia.consiglio.regione.lombardia.it/NormeLombardia/Accessibile/main.aspx?iddoc=lr002014112800031&view=showdoc#n9

Piedmont also has a law concenring soil sealing. The Regional Law n.56, 5 December1977 concerns this matter in Piedmont. During the years it has been adjourned and simplified. The purpose is to safeguard and to limit the soil consumption and it introduces several tools to plan and regulate the spatial usage on several levels. On regional level it requires to use the PRT (regional spatial plan – piano territorial regionale); on provincial level, PTCP (provincial spatial plan of coordination – piano territoriale di coordinamento provinciale) or PTGM if it is a metropolitan area; on sub-regional or sub-provincial level, PTO (operative spatial plan); and on municipality level, PRG (general regulator plan).

http://arianna.cr.piemonte.it/iterlegcoordweb/dettaglioLegge.do?urnLegge=urn:nir:regione.piemonte:legge:1977-12-05;56@2020-05-29

Article 10 of Umbria Regional Law n.17, 18 November 2008, defines the minimum percentage of permeable surface in different cases, such as new residential neighbourhood or services and productive neighbourhood.

http://www.crumbria.it/mostra_atto_stampabile.php?file=LR2008-17.XML&xml=&datafine=20090630

Regarding permeable surface and soil sealing, no regulation has been found amongst European laws. In 2012, some guidelines concerning these matters have been released by the European commission.

https://ec.europa.eu/environment/soil/pdf/guidelines/IT%20-%20Sealing%20Guidelines.pdf

UNI 11235:2015 – This regulation defines design, execution, control, and green roofs maintenance.

https://www.uni.com/index.php?option=com_content&view=article&id=4210%3Aroof-garden-pubblicata-la-norma-nazionale-uni-11235&catid=170&Itemid=2612

1.2. Step 2- Assigned Authorities

1.2.1. Authority responsible for adoption of policies and strategies regarding water reuse and rainwater use

Policies and strategies regarding water reuse and rainwater use can be adopted at all levels, national, regional or local. Currently there are not mandatory responsibilities.

1.2.2. Authority responsible for adoption of water reuse legislation

Legislation on environmental matter is in charge of the Italian parliament. On specific topics the legislative power can be transferred to regions or basin authority according to the d.lgs. 3 aprile 2006, n. 152.

1.2.3. Authority competent to supervise the recycled water quality standards

For domestic, urban, and industrial water reuse, the distribution network owner must check chemical and microbiological parameters of reused water. (DM 2003/185, art. 11)

https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2003-07-23&atto.codiceRedazionale=003G0210

1.2.4. Authority competent to supervise stormwater runoffs in relation to **burdening the wastewater infrastructure**

Municipalities and Integrated urban water management bodies.

1.2.5. Authority responsible for proposing and enacting spatial planning measure

The authorities responsible for proposing and enacting spatial planning regulations are national government and regions.

1.3. Step 3 - Levels of Government

Since these roles are shared in different ways between the national and local levels of government, the mapping report as part of the Assessment will distinguish between the roles and responsibilities of these levels of government wherever possible.

1.3.1. General competencies of national governments in relation to water reuse, rainwater use and stormwater runoffs

The national government addresses and provide guidelines for planning and programming at lower level on this matter. The national level is also in charge of defining the standards that rule the reuse of grey water and rainwater.

1.3.2. General competencies of regional governments, if they are present in your country, in relation to water reuse, rainwater use and stormwater runoffs

Regional governments must transmit information regarding the application of DM 2003/185 (water reuse) to the environmental ministry.

1.3.3. General competencies of local governments in relation to water reuse, rainwater use and stormwater runoffs

Municipalities can act by introducing in their (territorial) plans specific rules about water reuse, rainwater use and storm-water runoffs.

1.4. Step 4 - Prioritization

This initial assessment should also consider prioritization where necessary - some laws and regulations, for example, deal with very minor, sometimes subsector concerns in the overall policy and legal framework. The assessment should commence with the major laws and regulations that affect the overall landscape of

WMPP implementation and circular transition. After this, it will move into the more narrowly focused laws and regulations.

1.4.1. Should there be a national water reuse and rainwater use (e.g. National water conservation strategy) adopted in your country?

Yes, there should be, because Italy is one of the European countries which could have major economic effects thank to water reusing.

http://www.impel.eu/wp-content/uploads/2019/06/ITA-FR-2018-07-Urban-Water-Reuse-report.pdf

1.4.2. Which are the laws and regulations that provide a nation-wide framework for water reuse, recycled water standards, rainwater use, stormwater runoffs?

D.Lgs.152/06 is the framework regulation on water management. It includes a few articles concerning water saving and reuse. The legal prescriptions on these themes are however not mandatory and ask the Regional governments to issue specific regulations

Article 98 Water saving

Those managing or using water resources should adopt any measure to avoid water waste and to reduce water consumption and increase recycling and reusing of water, making recourse to the best available technology.

The Regions, in agreement with theeement with the Minister of Agriculture River Basin Authorities, shall approve regulations to promote water saving in agriculture, by planning of water use, careful identification of water needs and control of water abstraction for irrigation.

Article 99 Water reuse

The Minister of the environment by its own decree, in agreement with the Ministers of Agriculture, of Health and of economic development, issues technical regulations to reuse wastewater.

The Regions, in agreement with the principles of the national legislation and with the controlling Authorities, issue regulations to promote water recycling and wastewater reuse.

1.5. Step 5 – Existing Policy Support

The variety of actors, sectors and goals makes the circular economy in water and wastewater sector systemic by nature. It implies a wide policy focus. When interactions and complementarities are overlooked, the lack of a systemic approach might lead to the implementation of fragmented projects in the short to medium run, rather than sustainable policies in the long run. In many cases, the transition is mainly focused on enabling niche-level techno-economic experimentations, while more systemic socio-economic agendas have not yet been connected to circular economy debates. Existing policies that are directly or indirectly supporting the transition into a more circular water-economy should thus be explored and listed, since the policies are usually the initial step for institutional and legislative transformation.

1.5.1. Questions to be addressed:

The existing strategies and policies that should be considered in elaborating your national strategy and policies

- National, Regional and local plans for climate change adaptation

- National Strategy for sustainable development
- River Basin Management Plans
- Regional water protection Plans
- Local urban water management plans (groups of Municipalities)
- Local urban land use plans (Municipality)
- Building regulations (Municipality)

The key stakeholders / stakeholder groups that should be involved in the elaboration process.

- Ministry of the Environment (of the Ecological Transition)
- River Basin Authorities
- Regions
- Provinces and Metropolitan Areas
- Municipalities
- Italian Regulatory Authority for Energy, Networks and Environment (ARERA)
- Urban water authorities (groups of Municipalities)
- Water utilities
- Citizens associations and NGOs

2. Targeted Analysis of Results

2.1. SWOT Analysis Assessing the Necessity of Adopting Water Conservation Policies, Laws and Regulations

A SWOT analysis is a technique used to determine and define your Strengths, Weaknesses, Opportunities, and Threats – SWOT. Conducting a SWOT analysis is a powerful way to evaluate the existing basis, needs, opportunities and possibilities for the policy option to be proposed.

Following the first draft of Policy recommendations gathered within the CWC project, a stakeholder meeting was set to share and enrich the proposed recommendation. The activity with the stakeholders was conducted with a SWOT analysis. Results are presented merging Strength/Opportunities, and Weakness/Threats since this approach simplified the access of the stakeholders to the methodology and increased participation.

2.1.1. Promote innovative knowledge

STRENGTHS and OPPORTUNITIES
• *Increase knowledge at many level: policy makers, technicians, service operators, citizens* • *issue of certificates and badges certifying skills* • *Increase job opportunities for specific skill* • *Increase of holistic approach to solve water related issues – multidisciplinary approach* • *Incentives for the adoption of NBS instead of traditional approach* • *Introduction of water conservation standard in public procurements* • *Highlight the importance of water conservation related to climate change issues*
WEAKNESSES and THREATS
• *Lack of professional skill on water conservation technique and policies* • *Need for significant initial investment.* • *Difficult to join public and private towards innovative solutions*

2.1.2. Innovate the management of urban networks

STRENGTHS and OPPORTUNITIES
• *Highlight the importance of water conservation related to climate change issues* • *Introduce environmental KPI to evaluate Water service companies performances* • *Inform final users of environmental aspects related to water management results* • *Sharing data on water cycle on public platform (Open data)*
WEAKNESSES and THREATS

- *Low price of fresh water from the municipal water supply system.*
- *National rules and policies for water network might not consider local peculiarities*
- *Difficulties in changing status quo*
- *Rainwater is an uncertain source*
- *Intervention on water conservation are costly and increase water tariffs*
- *Need for significant initial investment.*

2.1.3. Innovate urban planning and building design

STRENGTHS and OPPORTUNITIES
• *Promote/incentivize permeable surface where possible* • *Create communities of water prosumers (on the model of energy prosumers comunities)* • *Compensate impermeable surfaces with sink-like elements* • *Define clear and simple regulatory procedures* • *Introduce rewards/penalties for the use of the soil in building regulations* • *Use of holistic approach to evaluate building projects (balance between environmental, economic and social sustainability)* • *Accompany regulation and legislation with practical guidelines* • *Promote intervention for water efficiency in building (with incentives similar to those for energy efficiency)*
WEAKNESSES and THREATS
• *Innovation in the urban planning can be unpopular* • *Difficult to change traditional ways of planning and designing* • *Difficult to operate on existing building* • *Difficult to introduce penalties for non-innovative building projects* • *Need for political agreement on unpopular matters*

2.1.4. Innovating economic tools: giving value to water

STRENGTHS and OPPORTUNITIES
• *Introducing environmental externalities* • *Introduce and promote water prosumers*
WEAKNESSES and THREATS
• *Water price is very low compared to other household utilities* • *Very difficult to rise water price to a fair value because there is not a correct perception of the value of this service*

2.1.5. Innovating the culture of water by correctly informing citizens

STRENGTHS and OPPORTUNITIES
• *Water sustainability as part of a wider education towards sustainability* • *Educate citizens to become water prosumers* • *Inform customers on the impact on water resource of the products* • *Inform citizens about risks of climate change* • *Inform citizens about good practice in place (e.g. water use reduction device in public building)* • *Use the water bill to inform and educate citizens* • *It's important to inform that the current use of water is not sustainable and there is need for a change*
WEAKNESSES and THREATS
• *Part of the population does not acknowledge climate change and potential issues on water resources.* • *Difficult to change a "flush and forget" approach* • *Good and efficient water service during extreme events (e.g. drought) doesn't make people have the correct perception on the risk of climate change* • *Difficult to find the correct way and means of communications on these topics* • *People living in condominium often don't even see the water bill*

2.1.6. Monitoring the water cycle

STRENGTHS and OPPORTUNITIES
• *Monitoring water resources and natural system is a priority* • *Monitoring to highlight hidden costs* • *Monitoring the whole water cycle: relation between water use and quality and quantity of water in rivers and lakes*
WEAKNESSES and THREATS
• *Monitoring in part already exists but the results are not communicated well enough*

2.2. PESTLE Analysis Assessing the Necessity of Adopting Water Conservation Policies, Laws and Regulations

A PESTLE analysis is a framework to analyse the key influencing factors (Political, Economic, Sociological, Technological, Legal and Environmental). It offers people professionals insight into the

external factors impacting the issues at hand. The analysis is flexible, so it can be used for a range of different scenarios.

POLITICAL ISSUES	*ECONOMIC ISSUES*
• *Some decision are unpopular, especially increase of water tariffs or urban planning regulation* • *Difficult to convince citizens (and politicians) on the need for modify habits* • *Lack of coherent strategy for implementing rainwater management on city level.* • *Lack of coherent strategy for the implementation of sustainable development principles.*	• *Water price is very low compared to other household utilities* • *Very difficult to rise water price to a fair value because there is not a correct perception of the value of this service* • *Low level of recognition of benefits associated with the application of drainage infrastructure facilities.*
SOCIAL ISSUES	*TECHNOLOGICAL ISSUES*
• *Part of the population does not acknowledge climate change and potential issues on water resources.* • *Difficult to change a "flush and forget" approach* • *Good and efficient water service during extreme events (e.g. drought) doesn't make people have the correct perception on the risk of climate change* • *Difficult to find the correct way and means of communications on these topics* • *People living in condominium often don't even see the water bill*	• *Pilot case must be implemented well and carefully because they can have a strong impact on public perception*
LEGAL ISSUES	*ENVIRONMENTAL ISSUES*
• *Define clear and simple regulatory procedures* • *Accompany regulation and legislation with practical guidelines*	• *Inform final users of environmental aspects related to water management results* • *Introducing environmental externalities in economic analysis* • *Part of the population does not acknowledge climate change and potential issues on water resources.* • *Monitoring the whole water cycle: relation between water use and quality and quantity of water in rivers and lakes*

3. Policy Recommendations

1) Promote innovative knowledge

Innovative technical solutions for sustainable water management are nowadays well known in the scientific world. These include management of distribution networks, remote control, systems for leak detection, collection and use of rainwater, separation, treatment and reuse of grey water, natural purification techniques for decentralized treatment, dry "sanitation" systems and separate urine collection, sustainable drainage systems.

It is necessary that all these scientific outcomes become part of the higher education and university programs (mainly surveyors, engineers, and architects) and of the retraining of the professionals as technicians, private and public managers, urban planners.

2) Innovate the management of urban networks

Nowadays the management of urban networks is assessed based on the quality of the service offered to citizens (regularity of service, quality of water, response time in the event of breakdowns ...).

To encourage managers to adopt more sustainable techniques and approaches, it is necessary to provide reward and penalty mechanisms based on the "environmental performance" such as:

- *Water losses (per Km of network) and ILI (Infrastructure Leakage Index)*
- *Energy efficiency of water supply networks (eg. Water Supply Energy Efficiency - WSEE)*
- *Untreated polluting load*
- *Environmental status of the water bodies, in particular upstream and downstream of the discharges of public treatment plants.*

On the basis of these parameters it would be possible to:

- *define standards of "environmental performance" of the Integrated Water Service*
- *disseminate the comparison of these performances*
- *develop administrative mechanisms that reward or penalise managers according to the environmental performance achieved, taking into account the specific territorial characteristics.*

3) Innovate urban planning and building design

In Italy, some regions have adopted regional regulations or technical guidelines to promote innovation in the sector of rain collection and, rarely, the separation between grey and black waters. The results

are still very limited. The regional urban planning legislation is the main tool that can have effects on the government plans of the municipal territory.

At a national level, we signal the example of Germany, were in 2000 an administrative court prohibited the practice to discharge rainwater in the sewer (as a consequence of sealing soils) without paying for it. German municipalities are updating their rules for sealed soils (e.g. by introducing a fee proportional to the sealed area), and as a consequence they are achieving a widespread use of green roofs and rain collection systems.

4) Innovating economic tools: giving value to water

A strategy to promote rational water consumption and encouraging the use of technological innovation must also intervene on the price, which in Italy is much lower than the European average. Adjusting water tariffs is also necessary to support the huge investments needed to improve the water distribution network and treatment systems. However, it is necessary that this adjustment takes into account the equity and social sustainability of the tariffs. The ideal tariff scheme should strongly discourage water consumption above the target value.

It is also necessary to provide financial mechanisms that allow water service operators to access credit at reasonable rates, to finance new infrastructure and maintenance.

For example, a fund could be built by reshaping and allocating for this purpose two existing taxes:

• the state fee for water derivations, whose amount has become negligible over time.

• the reclamation fee, mainly for agricultural purposes, in order to compensate for the management of hydraulic works for drainage and irrigation.

A third interesting possibility consists in inserting in the tariff an amortization rate of the infrastructures previously financed with non-repayable contributions.

5) Innovating the culture of water by correctly informing citizens

In order to apply the previous recommendations it is essential to involve and educate on water issues citizens, public administration operators, the environmental world, and water service professionals.

There is a clear need for an information strategy to increase attention and awareness on water issues, through long-term national education, culture and information programs targeting all categories of stakeholders.

A large investment is needed to improve organization and culture on water issues and to replicate virtuous case studies already existing. Major communication campaigns are needed to capture the attention of citizens and raise awareness. Campaigns must have national coordination and many different local implementations integrated with technical actions and intervention. In particular, it is essential to integrate information campaigns with changes to the regulatory framework and with the use of economic tools.

6) Monitoring the water cycle

The water system management can gain significant improvement by adopting monitoring systems. In water management, data are fundamental for a proper monitoring and to build models for a better planning. A better availability of data about the water cycle can help in taking correct decisions and especially to address a smarter use of water that allows a better water saving.

Monitoring can be applied in several contexts related to water: users behaviour in water use can be monitored, as well as the results of facilities installation. The monitoring can regard the use of fresh water, the waste water and also the harvesting of rain water or the reuse of grey water. For each context specific devices for data collection must be installed to allow monitoring.

The monitoring process can aim at increasing knowledge about the urban water cycle, but can also aim at testing the ability of an implemented set of interventions to achieve their goals, and at promptly recognising potential unwanted effects and adopt corrective measures, eventually including mitigation and compensation measures.

As an example, if smart water meters were installed in each household, water utility companies could collect data from individual users and develop predictive models to forecast domestic water use and, consequently, adapt their development and management plans.