PEACE ON CLIMATE

2022

The Value of Water Infrastructure in Waste Water Treatment in Albania and Syria

Yasar Althalja
(*Project Management WASH AMAL NGO* - **Syria/Turkey**)
Kristina Xhiveli
(*Environmental Specialist Urban Waste Management* - **Albania**)

ABSTRACT

Environmental and social issues are often treated separately from each other. However, in areas with significant environmental problems, communities face not only ecological problems but also numerous health, social and economic problems. For this reason, this working paper addresses the support needs of communities, countries, cities and states for the assessment of water resources and their treatment. It strives to bring a new perspective based on identifying social and health needs and problems, the implications of environmental issues on water and health and the well-being of communities.

Wastewater services include complex technical and environmental, economic and social processes .This article implements a wastewater treatment modeling framework in data wrapping analysis to measure the economic efficiency of wastewater service delivery in Albania and Syria while calculating the quality of services.

We find that the volume and type of sewage treatment, the number of treatment plants and the population density are among the exogenous factors that affect the operational efficiency of wastewater utilities. The inclusion of service quality parameters can make a significant difference in efficiency assessments.

But what does not treating them involve? What is the state of water in these places? Why do Mediterranean countries tend to dump their sewage system into the sea? What about treating this water in a country with conflict like Syria? How do conflicts affect the country's climate, water and economic changes?

Key messages

Under-investment in ecosystems results in reduced water services. Ecosystems form an important component of water infrastructure. Yet, typically, ecosystems are not allocated sufficient water or funding. As a result, water decisions have in many cases proved to be financially and economically sub-optimal. Ecosystems can no longer be ignored when formulating policies, shaping markets or setting price (IUCN- https://www.iucn.org/)

The economic benefits of improved water supply and – in particular – water infrastructure far outweigh the investment costs, surprisingly good news for Northern and Southern decision makers who often view investments as mere costs.

Investing in water is good business – improved water resources management and improved water supply and sanitation contributes significantly to increased production and productivity within economic sectors.

INTRODUCTION

Water is essential to all aspects of life. Water sustains families and communities. It supports economic productivity. From semiconductor manufacturing, to agriculture, to hotels and restaurants, all sectors of the economy rely on water.

In this report, the term "water infrastructure" is used to encompass the structures and facilities that are operated by water, wastewater, and storm water utilities, both public and investor-owned. These may include important infrastructure assets such as pipes, pumps, etc.

This paper consists of two parts. The first part provides a report of a small study in the field of assessment of water resources reserves. It describes the derivation of monetary values based on expected source wastewater treatment for several large water resources bodies in Albania and Syria and also discusses resources, methods and issues related to the compilation of these estimates. A critical decision in estimating water resources reserves is to determine the most appropriate valuation method for water infrastructure assets used in water capture, storage and distribution.

The second part of this paper provides a discussion of issues related to water treatment used infrastructure and expected results.

Why value water resources?

Many countries commit to producing physical measures of water flows and water reserves, as these measures clearly have the potential to inform important policy issues. A number of countries also generate official monetary estimates of different water flows and, again, the motivation for doing so is completely clear.

However, it is perhaps less clear why policymakers may want to determine the monetary value of water resources stocks. It is important to establish clear reasons for the monetary valuation of water resources reserves. These reasons should reflect the desire for evidence-based decision making and the reasons for undertaking the evaluation are likely to influence the choice of evaluation methodology. The economic assessment of water resources reserves can, therefore support the assessment of the contribution of water resources to the overall wealth of the nation.

Water resources are economic assets according to the System of National Accounts (SNA).

What is sustainable water?

A sustainable water system ensures "adequate supplies of water of good quality are maintained for the entire population of the planet, while preserving the hydrological, biological and chemical functions of ecosystems, adapting human activities within the capacity limits of nature and to combat vectors of water-related diseases" (United Nations, 1992).

Sustainable urban water management reflects growing concerns over "community wellbeing (rather than just

public health), ecological health and sustainable development, all of which can be collectively labelled as ‘green’ issues (Bartone et al., 1994)” (Marlow, Moglia, Cook, & Beale, 2013, p. 7151).

The main goals of sustainable urban water management are a more natural water cycle (pollution control, ecological regeneration and enhancement of urban amenities), enhancing water security through local source diversification and resource efficiency.

Response to Waste Water Treatment

Albania

Albania, officially the Republic of Albania, is a country in Southeastern Europe. It is located on the Adriatic and Ionian Sea within the Mediterranean Sea, and shares land borders with Montenegro to the northwest, Kosovo to the northeast, North Macedonia to the east, Greece to the south; and maritime borders with Greece, Montenegro and Italy to the west. Albania covers an area of 28,748 km2 (11,100 sq mi), with a population of 2.8 million. Tirana is the country's capital and largest city.

Geographically, Albania displays varied climatic, geological, hydrological, and morphological conditions. It possesses significant diversity with the landscape ranging from the snow-capped mountains in the Albanian Alps as well as the Korab, Skanderbeg, Pindus and Cerau nian Mountains to the hot and sunny coasts of the Albanian Adriatic and Ionian Sea along the Mediterranean Basin.

The income growth of a growing population is ensured by a development of large economic, followed by a growing demand for products. It is more than clear that this happens around urban centers and more pronounced in the central basin of Albania.

Non-management of livestock waste, use of pesticides and insecticides in agriculture, industrial discharges, sewage discharges of inhabited areas, as well as the lack of measures of a proper treatment and reuse of waste, lack of water quality management, have led to widespread degeneration of the earth's surface and surface waters.

The processes of urbanization and industrialization are very fast for necessary administration and management of discharged water and treatment of water basin conservation infrastructure.

This brings to the surface waters large amounts of untreated water that are fired from dwellings and industry.
The main source of surface water pollution in our country are urban discharges, which contain organic matter, compounds of soluble in phosphorus and nitrogen, which favor the eutrophication process, pathogenic bacteria and viruses, heavy metals and spoilage the appearance of the waters and give them a foul odor. Tirana is the city with the largest demographic flows.

Free movement and uncontrolled population have caused overcrowding of the city and peripheral areas, increasing the number of productive activities in the field of industry and agriculture. All these

processes have had an impact significantly in the increase of pollutants in the environment and in particular in the increase of the level of pollution in surface waters to levels of significantly, as a result of increased water discharge sun treated urban.

Since the city is crossed by two rivers, Tirana and Lana, by once this area still does not have any water treatment plant sewage, all urban discharges, all sewage discharges are directly in these rivers. The problem becomes more serious, these last 20 years, with the increase in the number of population, with the increase of activities of various businesses, and above all with the neglect of the construction of the water treatment urban plant. These rivers have already turned into two large collectors natural, sewage transport. The discharge of these rivers in Ishëm, also causes these pollutants to flow directly into the sea.

Syria

Syria officially the Syrian Arab Republic is a country in Western Asia, bordering Lebanon to the southwest, the Mediterranean Sea to the west, Turkey to the north, Iraq to the east, Jordan to the south, and Israel to the southwest.

Aleppo governorate is located in northwest Syria, near Turkey-Syria border. The main sources of income in Aleppo are trading and agricultural activities (crop production and sales, livestock breeding), skilled labor, salaries, and some remittances. The total number of people who are living in Aleppo reached up to 3.5 Million.

Hostilities in northwest Syria continue to have devastating consequences for the civilians.In our target location Batbu a combined gravity sewer system had been installed for the collection of rain and wastewater in 1992 by the municipality.

The municipality collected the wastewater with sewer systems, but they generally did not have any treatment plants (as is common in Syria).

The daily average of wastewater disposal at the end of the sewage network in Batbu is around 700 cubic meter per day which flow (as we take the average flow from 14 days measurements through ACU support to measure the flow and identify the waste water characterizes) untreated into an open channel.

The exact number of people now connected to the sewer system is not exactly known but is estimated to be approx. 45,000 people. It was observed that in summer the wastewater flow rate is lower due to lower water availability for the residents (wastewater is thus more concentrated in summer than in winter)., and also most of the farmers around the open channel are using the waste water to irrigate their crops.

Thus, the daily collected wastewater is not more than 15.5 L of wastewater per equivalent, which is a rather low figure compared to more affluent populations. But reflecting the fact of drinking water scarcity in the area where the daily share per capita is hardly reaching 20 litter of water.

What is sustainable water management infrastructure?

Sustainable water management infrastructure takes into account the environmental, social and economic consequences of infrastructure use. Sustainable urban water management is concerned with the well-being of the community along with traditional public health concerns. The main goals include a more natural water cycle, increasing water safety and resource efficiency. Sustainable urban water management tends to focus on a more decentralized approach to infrastructure and includes natural infrastructure such as rivers, wetlands and aquifers along with man-made components.

There are three components to water management infrastructure: water supply, water demand, and wastewater management.

Sustainable water management infrastructure should be assessed on the basis of its initial and life costs, including resource use, pollution control, and health outcomes. A sustainable water system requires that water consumption be lower than the natural rate of recharge, and that the use of material and energy of water infrastructure be sustainable for a long period of time.

But how are these in developing countries?

Albania

Albania has shortcomings in wastewater treatment. Large cities suffer from this shortcoming. The Qerret (Kavaja) and Durres have the water treatment plant. Other cities such as Tirana Fier, Vlora have a significant shortage and urban wastewater discharge into the sea.

Syria

The Syrian crises entered its 10th year without any solution, as there is no government to manage the northern Syria, and also currently around of 3.5 million people are living in small area and using small amount of the available clean water for drinking and irrigation, and through an 80% of their drinking water as a waste water to the open lands. In addition to that in northern Syria, much of the water resources are used inefficiently and uneconomically.

PART I – GENERAL

1. **Laying out the problem**

The main source of water pollution in Albania are urban emissions, containing organic matter, compounds of lobule in phosphorus and nitrogen, which favor the eutrophication process, and pathogenic viruses, heavy metals and decomposing substances the appearance of the waters and give them a foul odor.

Syria, in contrast, currently uses around 87% of the available freshwater resources for irrigation, supplemented by the use of untreated wastewater, as most of the farmers around the open channels of the waste water used to install their pumps and pump the waste water to irrigate their crops, which leads to health hazards, especially with regards to vegetables which are eaten raw.

Diseases such as typhoid, fever and parasitic infections not only cause suffering but also have enormous economic disadvantages for those infected and the national economy. In the Governorate of Aleppo, around 75% of the inhabitants were infected with hepatitis in the past at least once, and still suffering from different water borne diseases WBD.

Sources of water pollution are of natural and / or anthropogenic origin and can be divided into two groups: point and non-point sources.

- Point sources: The most important point sources are: discharges of urban liquid waste (sewage), discharges of industrial waste, discharges of liquid waste of livestock farms, rinsing waters (extracts) from solid waste landfills, etc.
- *Non-point sources*: The most common non-point sources are: agricultural land drainage water discharges, rainfall polluted (especially acid deposits), sewage pipeline leaks, street flushing, etc.

Classification of water pollution sources according to origin is in anthropogenic sources and in natural sources of pollution.

Anthropogenic sources of pollution

Anthropogenic chemical pollution is caused by urban activity that includes waste produced from daily living in housing, work, traffic and technological activity that includes industrial production. Mineral and chemical industries are the two most important sources of chemical pollution, although other industries such as pesticides, electricity, production and processing of hides and skins, paper and waste urban. Anthropogenic sources of water pollution are classified into 6 category. Each of them has subcategories and characteristics of own. They are:

1. Industrial sources of water pollution;
2. Municipal sources of pollution;
3. Agricultural sources of pollution;
4. Sources of rainfall leaks;
5. Sources from solid deposits;

Industrial sources of pollution

In industry, water participating for use in the industrial process, I taken from its treatment system or from wells, when it comes in contact with a certain process or product, contaminants may be added to it depending on the process or product used. Then this water obtained is classified as contaminated water. In each of these classifications industries may have contributed to water pollution if resources of their water supply are used in the industrial process.

Examples of industrial water pollution sources are:

Non-contact water. Where we can find:

- Boiler feed water;
- Heating water;
- Cooling water;
- Cooling capacitors.

. Contact water

- Water used to transport products, materials or chemical substances;
- Washing and rinsing water (products, equipment, floors);
- Water of solutions;
- Drinking water (dilution);
- Direct contact water in cooling and heating equipment;
- Urban liquid waste (sewage);
- Water and laundry;

Liquid industrial waste is divided into:

1) reaction water, which is water contaminated with chemicals reaction inputs as well as those of reaction products;
2) waters obtained from raw materials and raw products;
3) Leaks after rinsing of raw materials, packaging, equipment, etc .;
4) water extractors and absorbers;
5) wastewater from industries;
6) atmospheric precipitation, flowing down into the territories of industrial enterprises.

Municipal sources of water pollution

Typical non-industrial municipal water sources are as follows:
- Houses;
- Institutions (schools, hospitals, etc.);
- Shopping centers;
- Government administration.

It is assumed that non-industrial municipal wastewater resources will contain no pollutants other than:

- Feces;
- Paper;
- Urine;
- Food waste;
- Laundry water; car washes.

Urban wastewater treatment plant in Kavaja Albania

This is the first plant of its kind built in Albania after the 90s, has started operating since October 2005. It is located in the village of Qerret, at a distance of 0.6 km from the sea shore and approximately 6 km away from the city center of Kavaja.

The plant uses the method for wastewater treatment biological, specifically the method of treatment with biological filter, of the drip filter type. One of the treatment units is the biological filter, which is the basic unit of the treatment plant of the polluted waters of Kavaja. Hence in this scientific research topic we will we present the study conducted in relation to the biological kinetics of the bio-filter, of the drip filter type.

The biological layer of the drip filter, as well as that of the biologically active sludge, is composed from a complicated community of microorganism populations with key representatives from systematic groups of bacteria, actinomycetes, viruses, algae, fungi, etc. Plastic bed of filler provides the surface on which microorganisms grow.

The objective of this topic has been biological kinetics in the treatment of urban wastewater through the monitoring of the Urban Wastewater Treatment Plant of the city of Kavaja, determining the degree of pollution removal, expressed as NKO and NBO5, during different seasons

and years of study.

The material presents the methods of decomposition of materials biodegradable organics from the food chain that develops in these environments, based on which determine the biological kinetics of the biofilter treatment method used in The plant under study.

But can only one wastewater treatment plant be for the whole country?

Syria

Most of the domestic water in Syria is supplied by groundwater, wells, and springs. One exception is Aleppo city, which receives water for domestic use by pipelines from the Assad reservoir.[5] However, the city of Homs is supplied with surface water from the Orontes River through a pipeline from lake Homs
Prior to the conflict, people in Syria had benefited from well-developed centrally-managed water systems, while in terms of sewage systems and treatment plants only major cities were being adequately served. That affected the share of treatable and drinkable water reaching people in peripheral locations, who had to resort to less-developed technologies and possibly unsafe alternatives to cater for their needs.

Damaged and disrupted by the several years of conflict, water, sanitation and hygiene services and facilities have impacted the safe and regular access of about 14.6 million people to safe water, among other WASH services, while 7.6 million people are estimated to be in acute need for WASH services.

METHODOLOGY

Kavaja waste water treatment methodology

Kavaja plant carries out the treatment of wastewater up to the secondary level, through
biological method of drip filter type bio-filter .

The Kavaja plant is planned to serve the city and the surrounding villages for a total amount flow 1008 m3 for hour of polluted water. The city sewerage network is connected to the Plant by means of a main pipeline 8,000 m long and with a diameter of 1,000 m . This plant is equipped with a special pre-treatment node that receives all the water produced from septic tanks of individual families, which are not connected to the system of central sewers This quantity is injected, at the time when inflows are treated in the plant minimum.

The method which uses the biological filter, does not have a very wide application nowadays in developed countries because of the disadvantages it presents. In the method of biological treatment with bio-filter disadvantages come due to lack of oxygen in some parts of the layer biological of the drip filter. Lack of oxygen favors the bio-cenosis disorders of this layer causing not only the non-reproduction of some species until the formation of the non-condition their active in the form of cysts.

In this part of the bio-filter the release of gases of fermentation such as H_2S, NH_3, CO_2, CH_4, etc. which are accompanied by unpleasant odors collection of insects,

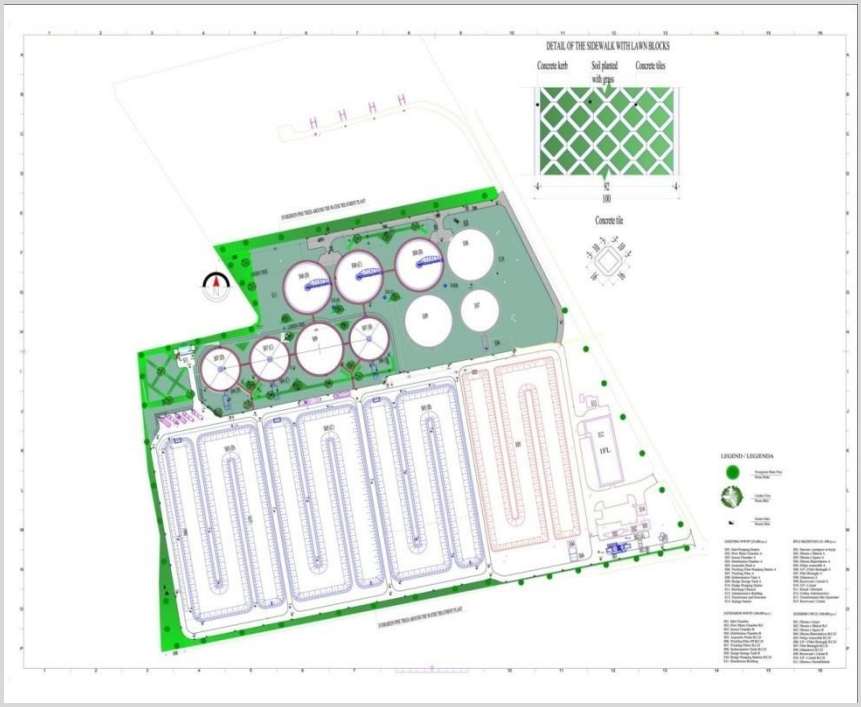
birds, etc. as well as low treatment efficiency in relation to surface in use. Drip filters, although thought of as aerobic processes in general, for the most part cases, their biological layer is relatively thick and exceeds the penetration depth of oxygen. Consequently, the biostratum consists of an aerobic outer layer and a layer of anoxic / anaerobic underwear.

With the multiplication of microorganisms, the thickness of the bio-film increases and the consumption of the amount of oxygen occurs before the entire thickness of the bio-film is described.

The phenomenon is evident in the samples taken at the bottom of the bio-filter, which contain the species anaerobes as representatives of ciliates, nematodes, cysts, and predators as rotators.
Biological methods of treatment predominate at the secondary level of treatment, as they are
the most effective and ecological options among possible treatment methods.

The main advantages of biological treatment are:

1- Lower construction and operation costs compared to alternative methods such as oxidative-chemical processes.
2- Realizes the oxidation of a large number of organic compounds.
3- Removal of reduced inorganic compounds, such as sulfides and ammonia and
removal of total nitrogen through denitrification.
4- Flexible operation to cope with a wide range of feeds and features.



Wastewater inlet room at the Kavaja Plant

Anaerobic basin in the primary treatment unit of the Kavaja Plant

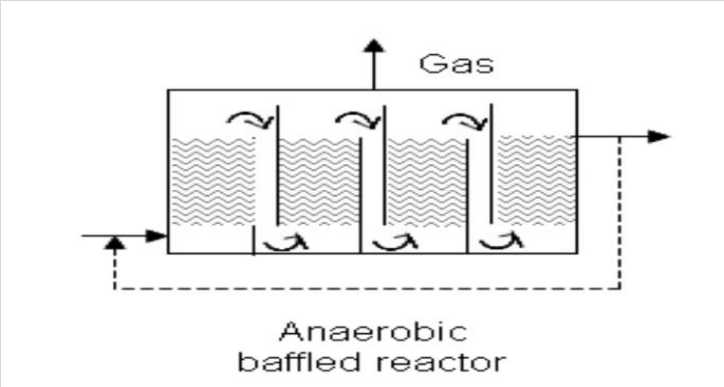
Albania is a country rich in water reserves but their treatment is in low management. There are premises for wastewater treatment in different counties but still these are lukewarm. Syria has problems with water reserves and their possibility in the face of numerous conflicts and extremism caused by the civil war again require improvement of water by treating it.

As water resources in Syria are scarce and water was subject to massive pressure, the Syrian state's goal does not depend on the government but on projects to improve the environmental situation in a number of cities in the Governor of Aleppo (4 million interested residents) through development of modern water and wastewater treatment infrastructure and an improvement of service providers. One of the goals was to comply with the requirements / flow standards of Directive 91/271 / EEC (Urban Wastewater Treatment).

The Proposed Solution:

The proposed project aims to mitigate previous mentioned risks and threats, by introducing a concept of integrated wastewater management starting by planning for safe collection and disposal of wastewater including possible use of the reclaimed water in agriculture, taking into consideration the social/cultural acceptance of the reuse, as well as the absence of reliable energy resource.

By connecting the wastewater network in Batabu to a low cost, simple technology, zero energy requirement and environment friendly decentralized wastewater treatment plant; it is estimated that the project will benefit 48 farmers in direct where these farmers will be using the reclaimed wastewater (according to the Syrian standards) for their irrigation. An ABR (Anaerobic Baffled reactor) will be installed:



This reactor will consist of inlet, tank with 5 Compartments, outlets and storage tanks, simple design, zero operation cost, easy to be managed and 70% the expected efficiency, the unpolluted water will go to the constructed and distributed storage tanks as the farmers will put their pumps in it and pump the treated water to irrigate their crops and the remaining will go to the ground water. The goals for doing this project in the near future is to improve the quality of the agriculture water to produce corps without pollution.

Integrated wastewater management has been introduced in selected areas in north-western Syria and wastewater is treated appropriately. Decentralized wastewater treatment plants to treat wastewater is on place.

PART II: REVIEW

The current water management infrastructure model relies on large-scale centrally managed systems, which are primarily aimed at affordable and reliable service delivery (Marlow, Moglia, Cook, & Beale, 2013). These systems are facing several challenges, including aging infrastructure, increasing urbanization, emerging contaminants, competitive water uses, and the need for measures to mitigate the effects of climate change. Centralized water systems depend on large quantities of water and require high levels of investments, and stable institutions.

The current model of water management infrastructure relies on large-scale managed systems, which mainly aim to provide affordable and reliable services (Marlow, Moglia, Cook, & Beale, 2013).

These systems are facing several challenges, including aging infrastructure, increasing urbanization, new pollution, competitive water uses, and the need for measures to mitigate the effects of climate change. Centralized water systems depend on large amounts of water and require high levels of investment and sustainable institutions in Albania and Syria, but how affordable is this?

Water supply:

Construction and operation of large-scale water supply infrastructure is as follows:

Environmental impacts due to life cycle impacts of inputs such as pipelines or electricity use.

The use of electricity in connection with water treatment and pumping contributes to a considerable amount of water supply.

So we have the negative sides that will affect the ecosystem in Syria, we have conflicts that have caused climate change, while in Albania this will affect the protected areas.

Water infrastructure can lead to declines in the quantity of water available. As cities grow, and agriculture and industry use more water, aquifers and other fresh water sources are depleted.

Water infrastructure can lead to a reduction in the amount of water available. As cities grow, and agriculture and industry use more water, water layers and other sources of fresh water are depleted. so we have an increase in water demand but resources will decrease.

Demand for water increase:

Water systems are designed to supply large amounts of water and offer no incentives to reduce or reuse water. Water demand is driven by a variety of uses, including landscape and industrial uses. As it grows, urban waters increase and their sampling increases.

Wastewater contains important sources, such as nitrogen and other nutrients, that are not properly captured by conventional wastewater infrastructure, which typically takes the form of aerobic wastewater treatment combined with anodic sludge digestion.

Wastewater treatment requires a significant amount of energy. Proper sampling damages surface water, groundwater and damages seas and oceans.

Policies that reflect the value of water

Water management policies and technologies can be divided into three areas: water supply, water demand and waste water management. The following technologies are generally considered:

Supply → "Green" infrastructure techniques such as restoration of wetlands, riparian buffers, reforestation, etc.

Demand → Water efficient appliances/fixtures → Smart water systems

Wastewater management

→ "Green" infrastructure techniques such as restoration of wetlands, riparian buffers, reforestation, etc. → Grey water recycling/separation

→ Localized sanitation

→ Decentralized rainwater collection and drainage (green roofs, permeable pavements) –

This review focuses primarily on built infrastructure for water supply in the agriculture sector (irrigation) and wastewater management or green investments.

Green Investments

Sustainable water management systems utilize more decentralized infrastructure in addition to natural features of the watershed such as lakes, rivers, and streams. Decentralized systems can have a lower cost to install, as well as being easier to maintain.

• Institutional

Decentralized systems can be installed where and when they are needed, which reduces the need for

large upfront investments as well as making it easier to expand services as necessary.

Example:

Conventional or centralized wastewater treatment systems involve advanced collection and treatment processes that collect, treat and discharge large quantities of wastewater.

Constructing a centralized treatment system for small rural communities or peri-urban areas in low-income countries will result in a burden of debts for the populace. “Decentralized or cluster wastewater treatment systems are designedto operate at a small scale.

They not only reduce the effects on the environment and public health butalso increase the ultimate reuse of wastewater depending on the community type, technical options, and local settings. Decentralized systems can cost 75 percent less than centralized systems ”(Massoud,Tarhini, & Nasr, 2009).

Greywater infractuture

Grey infrastructure refers to structures such as dams, seawalls, roads, pipes or water treatment plants. Adapting to the escalating impacts of climate breakdown — particularly for coastlines facing sea-level rise and stronger storms — requires changing our infrastructure.

Infrastructure is essential for economic growth. But as governments debate the future of sustainable development at the Rio+20 conference, there is one infrastructure solution that can provide a good return on investment: nature. "gray infrastructure", man-made solutions that often include concrete and steel are part of Albania and this causes damage to nature.

Regulatory	Grey Infrastructure / Green Infrastructure	
Environmental regulations increase costs for water use, waste water treatment	-	
Regulatory structures designed for existing centralized systems/ regulatory uncertainty	+	-

Social Pressure

Concerns over water pollution, health of watersheds	-	
Health concerns for reuse of water		-

Shortcomings of businessas-usual investment or valuing ecosystem as water infractuture?

So this brings a reminder to value water according to an economy which can not be more linear than gray infrastructure from a valued and green economy that cares about nature / ecosystems / protected areas.

Thus, total economic value provides a useful framework for considering water-related ecosystem goods and services, and for factoring them into economic calculations. Looking at

The total economic value of ecosystems essentially involves considering the full range of their characteristics as integrated systems: reserves or assets, flows of environmental services, andattributes of the ecosystem as a whole. In other words, it includes all the various present and future goods and services, both traded and non-traded, that ecosystems generate in relation to water.

But how does this affect countries in conflict like Syria? Does Syria have the capacity to change radically as extremism has affected climatic conditions especially water?

But can Albania turn the linear economy into a circulating one?

The overall objective of Eu donation with a budget 785,500 € to improve the living conditions of the population of Albania through alignment with the EU standards of the treated sewerage water discharged into rivers, lakes and the sea. In order to alleviate the existing serious deficiencies in the water supply and sanitation sector, the Government of Albania has decided to improve drastically the water supply and sewage collection and treatment services, mainly in the touristic coastal areas.

Inputs Albania	Outputs
Construction Capital / Insufficient Labour / not enough Raw materials (e.g., aluminium, steel) (rich in minerals) Water (rich) Energy (rich in minerals) Operation Labour - low Electricity use - rich Water use –rich Heating	Revenues (rent, taxes) Water quality Human health (mortality and morbidity) Ecological health Water scarcity Thermal pollution Visual impact Competition for land use

Inputs Syria	Outputs
Construction Capital / Insufficient Labour / enough Raw materials (e.g., aluminium, steel) (rich in minerals) Water (low) Energy (low) Operation Labour Electricity use Water use Heating	Revenues (rent, taxes) Water quality Human health (mortality and morbidity) Ecological health Water scarcity ? Thermal pollution ? Visual impact ? Competition for land use ??

The result is that: In Syria to protect and the water and sanitation needs of families and children in need, especially those in remote or peripheral areas who, due to disruption of water treatment facilities, have had to use unsafe alternatives, endangering the well-being of them and in some cases their lives.

Deterioration in WASH-related services such as lack of treatment of water supply systems, water pollution due to damage and leaks in sewer lines and inadequate chlorination levels in addition to the prevalence of sub-optimal hygiene practices that have contributed to - occurrence and outbreak of water-borne diseases such as hepatitis and watery diarrhea. This deterioration endangers public health and carries a high risk of disease for children and families in areas that do not have adequate water and sanitation equipment.

High costs of rehabilitation and implementation caused by the challenges of restoring technologically complex systems and the proper functioning and maintenance of high standard services before the crisis. Restoration of sewers and wastewater treatment plants remains a major challenge.

Issues

Determining accurate and appropriate values for the generated capital of the respective states should be essential for the sustainability of the assessment and the increase of water treatment capacities. Generated capital related to water supply revenues is a key component of the methodological process and changes in its value can significantly affect water resource estimates.

Choosing the valuation base can result in significantly different valuation figures for the same assets The nature of the water supply business means market-based evidence of fair value is unlikely to exist. Furthermore, water infrastructure assets can be legitimately described as specialized in character, which means that Syrian accounting standards do not allow this in connection with the conflict and makes the projects work secretly to the government.

Results

There was a significant change in water infrastructure throughout the Albanian country profiled by water suppliers. We have a grey water infrastructure but we still do not have a green infrastructure. So we have an essential water treatment plant but large counties do not yet have a wastewater treatment by discharging them into rivers

Syria with a pronounced conflict and extremism as a country has caused bloody wars but again the insufficiency of water makes them seek water treatment by valuing it more than the Mediterranean countries. Insufficient funding for project ban by the government makes wastewater treatment a slow process.

The most important role of water valuation is in demand management and better allocation among its various uses. Improved water resource management requires decisions based on economic efficiency, social equity, and ecological sustainability. Ultimately the value of water does not depend solely on its quantity but on at least four other factors - quality, location, reliability of access, and time of availability.

Ecosystem evaluation of economics for infrastructure of water should not, and cannot, be carried out in isolation from the different groups who use, depend on and manage water. These range from local landholders, through sectoral specialists, water planners and environmental managers, to high-level political decision-makers and foreign donors.

Conventional water management systems can be difficult to change once they have been implemented. The widespread adoption of a specific water management solution leads to both institutional and technological ‘locking’ effects. This is due to both the difficulty of retrofitting existing water systems, and the long expected life times of conventional water systems.

Sustainable water systems to be successful in these two countries must at least have :

• (**1) The effects of innovation:** lack of capacity to manage the risks and uncertainties associated with new water management systems.

• **(2) Practical challenges:** Issues such as the complexity of day-to-day management, community resilience to change

• **(3) Financial considerations**: Water utilities often face financial challenges for maintaining current infrastructure, making it difficult to allocate funds in new infrastructure. Revenues of water service providers are often linked to the volume of water use, which provides incentives to increase water supply and demand. In some cases, building new green infrastructure is more costly than using or expanding existing infrastructure.

BIBLIOGRAPHY

Adee, S. (2016). *Bacteria made to turn sewage into clean water - and electricity*. Retrieved from New Scientist: https://www.newscientist.com/article/mg23130840-100-bacteria-made-to-turn-sewage-into-clean-water-and- electricity/

Brouwer, C., Prins, K., & Heilbloem, M. (1989). *Irrigation Water Management: Irrigation Scheduling*. Rome: FAO Land and Water Development Division.

OECD Data; see also Winpenny, J.T., 2003, Financing Water for All: Report of the World Panel on Financing Water Infrastructure, World Water Council, 3rd World Water Forum and Global Water Partnership. 2

Guerquin, F., Ahmed, T., Hua, M., Ikeda, T., Ozbilen, V. and M. Schuttelaar, 2003, Making Water Flow for All, World Water Action Unit, World Water Council, Marseilles. 3 Winpenny, J.T., 2003, op cit https://www.iucn.org/backup_iucn/cmsdata.iucn.org/downloads/10_value.pdf

Bakker K. 2010. Privatizing water. Governance failure and the world´s urban water crisis. Cornell Univ.

Elejda, "Urban Wastewater Treatment and the Albanian Reality", 2009, p. 26- 31. Gjiknuri Lekë, "Zoology of Invertebrates", SHBLU, 1994

Dorit, Walker, Barnes, Zoology, International Edition, Saunders College Publishing, 1991, pp. 561 - 581, pp. 641-655, p. 693 - 766

Çobani E. “Kinetics in Wastewater Treatment ” 2012, p 3-68-69-70 https://www.upt.al/images/stories/phd/E_Cobani_ujerat.pDF