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WATER RESEARCH COMMISSION

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**REPORT FOR THE WATER RESEARCH COMMISSION FOR DELIVERABLE 8- STAKEHOLDER ENGAGEMENT (WRC/PEERC ONLINE SEMINAR) FOR THE PROJECT TITLED “FURTHER EVIDENCE ON THE DEBATE TO SHAKE OFF THE SOUTH AFRICAN WATER PRICING SYSTEM” HELD ON THE 13<sup>TH</sup> OF SEPTEMBER 2023 ON MICROSOFT TEAM (ONLINE)**

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**PRESENT SPEAKERS**

Jugal Mahabir	Public and Environmental Economics Research Centre
Jay Bhagwan	Water Research Commission
Margaret Majola	Department of Water and Sanitation (Raw Water Pricing)
James Matsie	South African Local Government Association

**APOLOGIES**

Tawanda Nyandoro	Rand Water
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**WEBINAR PARTICIPATION**

Registered participants	65
Cancelled registrations	1
Attended participants	54

**1 INTRODUCTION.**

The Public and Environmental Economics Research Centre (PEERC) is undertaking exploratory research on the opportunities for the incorporation of scarcity and climate change factors into the water pricing system in South Africa, using a dynamic pricing model. The seminar presented the preliminary findings of the research and looks to elicit stakeholder input towards the improvement and finalization of the research and recommendations.

Welcome and introductions from the Water Research Commission, Jay Bhagwan. Jay also provided background of the study.

## **2 PRESENTATION- FURTHER EVIDENCE ON THE DEBATE TO SHAKE OFF THE SOUTH AFRICAN WATER PRICING SYSTEM-EXPLORATION OF DYNAMIC WATER PRICING IN SOUTH AFRICA.**

Jugal Mahabir introduced the team and expressed gratitude to the several members for attending the seminar. The presentation done was on the Water Pricing Model and the outline of the presentation was the project overview, assessment of the current model, dynamic water pricing model and simulation, applicability of dynamic water tariffs as well as the way forward. Jugal indicated that there are shortcomings to the model but with further team discussions, they would come up with interventions from both the demand and supply side. The project overview as indicated by Jugal depicted the growing demand for water and the water supply issues. The non-pricing and pricing models would be remedies to the water demand management of this crisis. He further went on to discuss the well-designed pricing system that aims to achieve equity, financial and environmental sustainability. Mr. Jugal also related the issue to the South African context by observing the supply volatility of water for cities like Cape Town and Nelson Mandela Bay in the last 5 years. The interventions in place as he stated were temporary and done under arrangement with national government. The fundamental research question he raised was whether the current pricing strategy be proactive to better deal with the issues and send the correct signal to consumers. He continued to say that the current pricing strategy could contribute to the current climate change problem and demand and supply issues. Methodologically, the objectives were then summarized looking at the concept of pricing, the assessment, the design, the impact as well as the applicability of the model. The estimation of the water demand model was done incorporating climate change variables to see the impact it could have on consumption and its interaction with the price variable. The background of the methodology is the fact that the Stone Geory estimation model was used for metros in the year 2014/2015 creating the point that water price elasticity demand was high. Variables demand models were run on different quantiles. Price elasticities varied from -0.25 to -0.85. The results also indicated that the introduction of climate change variables shows a significant impact on consumption whereas the interactive terms with price and climate change showed an insignificant impact.

The next part of the presentation delved into the dynamic water pricing model. Theoretical background was explained by Jugal on the distinction for water scarcity being there and when it is not. The literature around this was also reviewed and discussed. Jugal further on discussed the options for dynamic pricing. The first option was the price variation and climate change variables. The City of Tshwane assisted with providing some of the data that was needed, and the simulations were presented. The study also simulated the potential impact on dynamic water pricing on demand. Essentially, climate variables do not necessarily reflect scarcity, but attempts to control consumption for potential scarcity. The team at PEERC did not apply the dynamic tariffs to the lower income bands, as the work would need to be extended to see the impact on municipal revenue and affordability analysis. To conclude option one, on this option, once the price is linked to climate, variables are relatively easy to implement and there's no real requirement for additional capital or extreme smart solutions. The idea is to design the tariffs in a dynamic way, taking into consideration available climate change data or climate variables. However, climate variables do not necessarily reflect scarcity, but attempts to control consumption for potential scarcity.

The second option presented was the price variation and reservoir levels. This method develops a scarcity premium on a tariff linked directly to the supply or current quantity available at a reservoir and relative to the value each user of the water in this reservoir places on it. Essentially what the method argues is that if the price reflecting the current benefit placed on water at a given time, water becomes scarce, the price should relatively increase depending on the benefit that is applied to it. Through then several discussions with the committee the team at PEERC decided to broaden the study and not just look at

dynamic pricing from the municipal side of things but also at a larger scale which is at raw water level. However, the team then decided to look at allocation in its complexity to find out how the dynamics of allocation changed, i.e. behavior change and does climate change now have an impact of how allocation is done and is the impact embedded in the way raw water is allocated. Jugal mentioned that he agrees that the question around allocation and dynamic water pricing was complex, but the team took an approach of looking at dynamic water tariffs at raw water level and then see if dynamic pricing cannot improve raw water allocation. Jugal mentioned that this would be done through a four-step approach. And that the first thing that needs to be done is on the demand side, work out the marginal value placed on an additional allocation of water by the user. Secondly, look at the supply side and work out the impact of climate change on supply but also on the ecological needs and whether these dynamics are now impacting on the environmental and economical aspects of a catchment area and how that would link to demand and based on the interaction between the two and then develop a scarcity based tariff to adjust the price relative to either increases here or decreases here. This option adopted the framework called the hydroeconomic modelling. This links the hydrological features of a scheme or supply or water supply area.

The challenge that the team picked up is that climate-based tariffs might work at municipal level but to the complexities required for dynamic pricing related to supply, and to the levels of the reservoirs becomes complex. During the interaction with the City of Tshwane, the team there pointed out that they have a lot of reservoirs that serve different areas and different demographics and in most cases the areas that are under supply constraints are usually relatively poorer areas. The feedback was dynamic water pricing might be complex in this part of the supply chain. Although the standards for water tariffs speaks on drought pricing and scarcity pricing, it gives background for something such as the MFMA which alludes to the fact that tariffs cannot be changed during the financial year. The interaction between the two and the impacts are important to note for this study.

### **3 COMMENTS-RESPONSES**

Margaret Majola (Department of Water and Sanitation); Margaret recognized the work that the team has done with the study and mentioned that the study will be of service to the department as they are finalizing the revision of the present strategy and the research would assist them with better ways regarding the pricing. She further mentioned that the department of water and sanitation agrees with the research that shows that the current pricing model does not reflect the scarcity of water. Furthermore, Margaret mentioned that as the department of water and sanitation is currently facing challenges with the raw water pricing specifically irrigation tariffs where if a certain area faces drought conditions, there are users that would call for a rebate on the current tariffs that are being levied. The suggestion was that the team should take into consideration ensuring food security as increasing tariffs based on demand would have an impact on economic growth and food security. She also noted that in the raw water division, there are three charges that could be applied on which is the water management resource charge, the infrastructure side of the tariff as well as the waste management side that the department is currently introducing. So, the research will assist the department with determining how the dynamic water pricing model would be applied in those three charging points.

James Matsie (SALGA); James Matsie appreciated the work done by the team and added that the team would need to consider other variables such as behaviour change and citizen education on the value of the resources available. James mentioned that citizen education will give the masses an idea of the effort that goes into the accessibility of those resources and to encourage sparing use of the resources. He further suggested that the Department of Basic Education would need to be part of the conversation around this study in terms of including the sparing use of resources as part of the curriculum in all South African schools.

James re-emphasized the point that the team is on the right path but would need to consider other variables when the study is taken further.