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INNOVATION PRIZES IN WATER DISTRIBUTION

A blue-tinted background image showing a pair of hands cupped together, with water being poured from a tap into them. The water is captured in motion, creating splashes and droplets.

THE DREAMPIPE CHALLENGE: REDUCING WATER LOSSES IN LOW-INCOME COUNTRIES

FINAL EVALUATION SUMMARY

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THE DREAMPIPE CHALLENGE: REDUCING WATER LOSSES IN LOW-INCOME COUNTRIES

The Dreampipe Challenge was a competition to increase investments from non-conventional sources (mainly commercial) in the reduction of non-revenue water (NRW), which is the difference between the amount supplied by utilities and that billed to users. Dreampipe, which ran from 2016 to 2018, focused on DFID's 28 priority countries in Africa and Asia, where NRW is a challenge aggravated by water scarcity, rapid urbanisation and a growing population.

Dreampipe is one of a number of innovation prizes under Ideas to Impact, a DFID-funded programme. The programme was established to test the value of using innovation prizes to achieve international development outcomes, often to encourage people to act differently over months or years.

An innovation prize offers a reward to whoever can first or most effectively solve or meet a pre-defined challenge. Two key types of innovation prize include recognition and inducement prizes.

Unlike recognition prizes, which reward past achievement, inducement prizes, such as those run by Ideas to Impact, define award criteria in advance to spur innovation towards a predefined goal.

The potential for using an innovation prize to help solve the issue of financing NRW reduction in developing countries was identified as part of a broader scoping study, undertaken by Trémolet Consulting for the Ideas to Impact programme (Trémolet, S., 2015. Can innovation prizes help address water and sanitation challenges? Ideas to Impact).

As the programme's evaluators, Itad is supporting Ideas to Impact to understand if such prizes worked as expected, and when and where they could be useful as a funding mechanism for international development, compared to other forms of funding such as grants.

If you just want to find out what happened when Ideas to Impact tried using prizes to attract non-traditional investors to finance non-revenue water reduction, then this summary is for you. If you want to know more about the Prize and specific details of the evaluation, please see the full evaluation report, which is available on the Ideas to Impact website.

ACKNOWLEDGEMENTS

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DISCLAIMER

The views expressed in this report are those of the evaluators. They do not represent those of IMC or of any of the individuals and organisations referred to in the report.

THE CHALLENGE: ATTRACTING NEW INVESTMENT TO THE SCALING UP OF NON-REVENUE WATER REDUCTION IN DEVELOPING COUNTRIES

Non-revenue water (NRW) is the difference between the amount of water put into the piped system and the amount billed to customers. This difference is caused by physical water losses, such as burst and unrepaired pipes, and commercial water losses, because of incorrect or absent billing and unauthorised water consumption. NRW affects all water utilities but is particularly high in many utilities in the developing world.

Traditionally, the scaling-up of NRW activities in developing countries has only been of interest to conventional sources of funding (mainly the development banks and agencies, and governments). This lack of broader financing has a knock-on effect on water utilities who struggle with reduced revenues, increased costs and reduced ability to obtain financial backing. When water utilities are unable to provide a consistent and sufficient supply of high-quality, safe water to their customers, this has negative effects on customers' health, sanitation and productivity; it disproportionately affects people living in poorer areas (IMC Worldwide, 2016. Dreampipe II, Innovation prizes in water distribution: An overview. Ideas to Impact).

NRW is a preventable waste of scarce water and energy resources, but why is it hard to attract commercial non-traditional sources of financing to the scaling-up of NRW reduction activities? From their research into this problem, Ideas to Impact learned that a major obstacle is that investing in NRW activity by water utilities in developing countries is perceived to be risky; a high level of NRW usually indicates that a utility is poorly managed (IMC Worldwide, 2016).

As a result, utilities struggle to mobilise financing for these activities. Investors would need to be convinced of the feasibility of scale-up activities and that the risks had been mitigated. One way to help convince financiers of the viability of larger efforts would be by first carrying out successful smaller demonstration projects. Another, would be to put together deal structures that make the best use of concessional financing to mobilise additional financing from more commercially oriented sources.

It was on this basis that Ideas to Impact designed the Dreampipe Prize to reduce perceived risk. **Dreampipe aimed to encourage the development of workable and replicable ideas for expanding the finance available for NRW reduction activities in developing countries – and do so beyond conventional sources.**

DREAMPIPE: A SERIES OF PRIZES THAT HAVE EVOLVED BASED ON EXPERIENCE

The Dreampipe Prize has evolved significantly since it was first designed. Dreampipe was originally conceived as a two-stage Prize.

Based on the quality and quantity of submissions received during Stage 1, the Prize Team took time out after Stage 1 was awarded, to consult with a range of stakeholders to understand how to make the Prize more effective. "Stage 1" became known as Dreampipe I and Dreampipe II was launched, with a focus this time on sources of finance for NRW reduction, rather than mechanisms. With a similar overall objective to the original Prize design, Dreampipe II aimed to promote unusual investment into the NRW reduction sector and de-risk this prospect for non-traditional financing sources.

Dreampipe II was designed as an "inducement prize" to reward the best business plans, demonstration projects and structured deals in three separate but consecutive phases: Phase 1 – Business Plan: applicants were to show how they would carry out the requirements of Phase 2.

Phase 2 – Demonstration Project: winners of Phase 1 were to carry out (and fully document) a demonstration project to reduce NRW in a selected water utility in one of the 28 DFID focus countries in effect at that time.

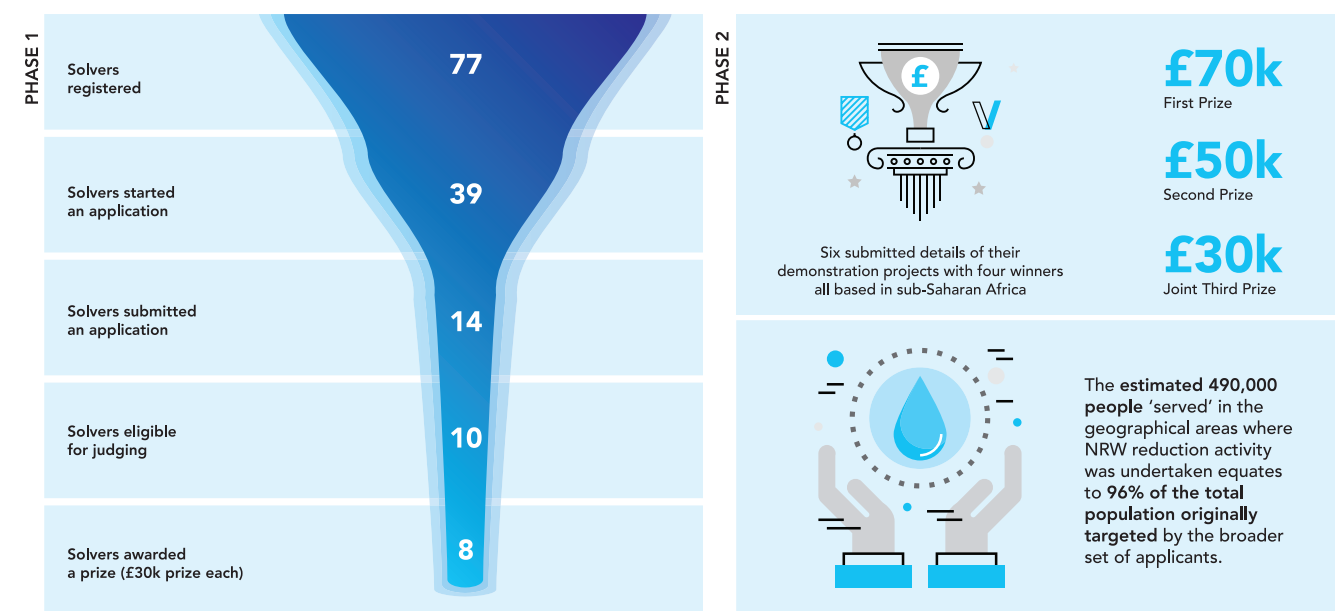
Candidates also had to submit an updated business plan focusing on financing and contracting for a major expansion project in the same utility, building upon the experience of the demonstration project and involving an NRW reduction performance-based contract with an entity that was independent from the water utility.

Phase 3 – Fully Structured Deal: winners from Phase 2 were to submit term sheets (agreed by all parties) for all major project and financing agreements needed for the expansion project in the selected water utility, including for the performance-based contract.

While this is an evaluation of Dreampipe II as a whole, in practice it is only of the first two phases. Based on the results and plans of the four winners of Phase 2, these solvers would have been heading in different directions for their expansion projects.

The Prize Team sought to accommodate this; however, they could not find a way to do so that was within the original scope of the third phase and in keeping with the overall aim of the Prize. In addition, they felt that a further prize was not needed to incentivise the winners to proceed with their NRW reduction plans. In agreement with DFID, the Prize Team closed Dreampipe II at the end of Phase 2.

DREAMPIPE: WHAT HAPPENED



DREAMPIPE II – DID IT WORK?

Dreampipe made progress towards mobilising non-traditional finance for NRW reduction, but there is scope for Ideas to Impact to achieve more with the Prize in the area of raising awareness.

Ideas to Impact hoped that if Dreampipe II were able to reward the best business plans, demonstration projects and structured deals, and make non-traditional and commercial sources of finance aware of these, water utilities would be able to undertake investment in NRW reduction activities.

This evaluation found **the Prize has had some success in stimulating water utilities to de-risk the prospect of non-traditional investment in NRW reduction.** Dreampipe II's participants produced new business plans for utilities to reduce NRW in sub-Saharan Africa and went on to implement the associated demonstration projects. The Prize was a catalyst for NRW reduction action by water utilities, consultancies and the private sector; supporting new partnerships for NRW reduction, both within and across organisations, and new and different ways of working.

There is evidence that activity for some projects continued beyond the end of Phase 2 – leading to further reduced physical and commercial water loss. While it was not a requirement during Phase 2, there is moderate evidence that the four winning demonstration projects were financed by non-traditional sources albeit at a small scale, including utilities' own funds. However, by the time the Prize closed, it had not resulted in uncovering new ways that are obviously replicable to finance NRW reduction at scale using non-traditional investment sources. This said, the Prize did surface unexpected solutions from unforeseen sources; which can be considered a particular prize effect.

Dreampipe II closed at the end of Phase 2, before Phase 3 was run, because its goal had been achieved as far as was reasonably possible and so there was little to be gained in continuing as planned. Based on the evidence now available, this evaluation finds that Ideas to Impact fully explored the options to continue running the Prize, and that closing the Prize early was the right decision. Phase 3 is unlikely to have led to the mobilisation of non-traditional funding as originally envisaged.

While the rationale for not continuing beyond Phase 2 is clear, the lack of a final phase and its accompanying publicity means **Dreampipe II has only had limited success in achieving its other objective of raising awareness** among water, finance and development actors of the challenges of securing non-traditional financing for NRW reduction in developing countries. With further investment in communications, the success of Phase 2 projects, along with the learning generated by the Prize about the underlying development problem it sought to address, could be built upon to raise awareness of NRW and encourage future solutions.

'WE COULDN'T HAVE RUN THIS INITIATIVE WITHOUT DREAMPIPE, ALTHOUGH WE WOULD HAVE LOVED TO. [...] NOW EVERYONE HAS CONFIDENCE IN WHAT CAN BE DONE AND MIGHT DECIDE TO INVEST [IN NRW REDUCTION].'

- Nyananso Ekanem, Managing Director of third place winner, Nigerian management consultancy Weircapacity

THE WINNERS

Award (GBP)	Organisation and Project	Description
First prize 70,000	South Africa: WRP, working with Tshwane Metro (a city) and SAB, now part of the AB InBev group	With funding from South African Breweries (SAB), implemented their demonstration project in an area with 51,000 water connections. The intervention focused on night flow analysis, pressure optimisation, pump management, leak detection and substitution of local groundwater for more costly purchased bulk water. Leak repairs reduced the network water supply requirements by 15%, which is the equivalent of about 200,000 cubic metres per month. Most of this had previously been NRW.
Second prize 50,000	Zambia: Nkana Water and Sewerage Company (Nkana Water)	Implemented their demonstration project in Mukuba Natwange, an area with 1,100 water connections. Their approach consisted of the setup of a district metered zone equipped with bulk meters, a baseline survey and database clean-up, replacement of leaking distribution mains and community mobilisation. Customer metering was increased from 75% to 98%.
Third prize (joint) 30,000	Uganda: National Water and Sewerage Corporation (NWSC)	Implemented their demonstration project in Kyaliwajjala Branch, one of the 24 administrative units in the Kampala Water supply service area. The project, which was delivered in an area with 16,000 water connections, involved a comprehensive set of measures to tackle both physical and commercial losses. A sharp focus was on the laying of new water mains, proactive leak detection and repair, meter testing and repair, improved customer knowledge and detection of illegal connections.
Third prize (joint) 30,000	Nigeria: Weircapacity, working with the Kaduna State Water Corporation (KADSWAC)	Implemented their demonstration project in Kaduna, northern Nigeria, in an area with 450 water connections. The intervention involved a thorough mapping of the network, installation of bulk meters and a detailed customer survey.
Additional prize winners (in Phase 1)	Mozambique: Águas da Região de Maputo Ghana: Integrated Water Resources International (IWRI), working with Ghana Water Kenya: Upande Ltd, working with Nakuru Rural Water & Sanitation Co South Africa: Michael Goldblatt, working with Nelson Mandela Bay Metropolitan Municipality	

WHAT WORKED?

Dreampipe II encouraged eight feasible and effective business plans

Ten eligible applications came in directly from water utilities, as well as water consultancies, technology companies and an individual consultant in partnership with a water utility.

Of these, the Prize's judges determined that eight were feasible and effective, and each of the eight participants received £30,000; giving them automatic entry to Phase 2 (Demonstration Project). The solutions put forward in Phase 1 were largely focused on the technical aspects of specific NRW reduction projects, with less information provided on how the performance of these projects would likely be used to help convince new sources of funding to finance a larger expansion project.

This is not surprising, given that, at this stage in the competition, the solutions were judged predominantly on the feasibility and effectiveness of the demonstration project itself. All 10 applicants went through to Phase 2; having allowed for 10 participants in Phase 2, the Prize Team offered the two high-scoring non-winners feedback and the chance to participate in the Demonstration Project phase.

Six demonstration projects made it through to judging at the end of Phase 2

Three solvers left the competition during Phase 2 (including the two who had not received prize money at the end of Phase 1) and so seven projects were submitted, of which six were eligible for judging. Four solvers were awarded with prize money: 1st place £70,000; 2nd place £50,000; and joint 3rd place received £30,000 each.

Phase 2 demonstration projects had excellent coverage and led to some reduction in water losses

We found evidence that the demonstration projects reached the expected number of people, despite only seven of the demonstration projects continuing through to implementation.

The estimated 490,000 people "served" in the geographical areas where NRW reduction activity was undertaken equates to 96% of the total population originally targeted by the broader set of applicants.

While this evaluation was not required to directly consider impact-level change, there is limited evidence that the demonstration projects run by solver teams in Phase 2 led to the reduction of both physical and commercial NRW losses (albeit on a small scale). Illegal water users were disconnected as part of the NRW reduction activity and will inevitably have experienced negative outcomes; however, the net economic/social effect may be positive.

Phase 2 winners have continued with NRW reduction activities

Our evaluation found that the first-place winner of Dreampipe II has continued with their expansion project as planned, despite the incentive of a third phase Prize being withdrawn. This solver is using financing from the same non-traditional, commercial partner as in Phase 2.

Although the utilities associated with the other three overall winners have not sought or secured external, non-traditional financing, there is evidence that they have each continued with and, in some cases, expanded their NRW reduction activities. In addition, a water consultancy that was involved in one of these projects has continued to pursue the idea of securing non-traditional financing for NRW reduction by other water utilities.

SUMMARY OF IDEAS TO IMPACT PRIZE EFFECTS



Source: Adapted from Ward, J. and Dixon, C. 2015. Innovation prizes: a guide for use in a developing country context. Ideas to Impact.

WHERE COULD THINGS HAVE BEEN IMPROVED?

Sharing the learning from the Prize on how to approach non-traditional financing of NRW reduction in developing countries

One of the intended outcomes of Dreampipe II was to raise awareness of NRW and encourage replication projects, using learning and ideas from the Prize.

Without the fully structured deals that were expected to come from Phase 3 of Dreampipe II, there has been a limit to what the Prize Team can do towards this outcome under the current prize design. However, our analysis shows that this may be a missed opportunity to obtain more value from the Prize.

The evaluation findings suggest there is more scope for applying the learning from Dreampipe II on how to approach the issue of financing the reduction of NRW in developing countries than there is for replicating the solutions developed as part of the Prize.

Anticipating the need to provide support to solvers during Phase 3

Overall, the evidence suggests that Phase 3 may have provided sufficient motivation for solver teams to try to secure non-traditional financing, but it is unlikely that all four winners of Phase 2 would have met Phase 3's requirements, as stated in the Phase 2 guidance document, without significant solver support to identify financiers and establish a fully structured deal with an entity that is independent from the water utility.

DID DREAMPIPE II ACHIEVE VALUE FOR MONEY FOR DFID?

To investigate value for money (VFM), we compared Dreampipe II to the expectations that the Prize Team had of it, within the “Four Es” (Economy, Efficiency, Effectiveness and Equity). Direct comparison between what was achieved and what was expected were hard to make, in part due to the learning-by-doing approach the Prize Team took to implementation.

Also, the three-stage nature of the Prize meant that time was invested in scoping and designing the overall Prize and each of the phases. While the experience of implementing Dreampipe I supported this process, Dreampipe II was a new prize and effectively the “first-run” of the Prize. Were the Prize to be run again, it is unlikely to require the same level of investment.

Where a suitable comparator can be found, our aim is to perform a comparative VFM analysis by comparing each Ideas to Impact prize with a programme aimed at achieving similar outcomes but using a different funding model. The evaluation team, Prize Team, Ideas to Impact programme team and DFID together explored various types of comparators for an external VFM assessment but we were unable to find one that could satisfy all the requirements, including having the necessary data available.

Dreampipe II met the Prize Team’s expectations against Economy, and fell slightly short against those for Efficiency and Effectiveness

There is strong evidence that the Prize was launched and ran according to the original time schedule, and that it was implemented within the original budget. Under Effectiveness, we considered two intended effects of Dreampipe II.

The primary effect being point solution (finding a solution to a highly specified component of a problem) and the secondary effect being to raise awareness (of the Prize’s focus development issue). There is moderate evidence that the Prize stimulated effective and feasible solutions for de-risking NRW reduction, although these did not use non-traditional financing that is obviously replicable or scalable (this not being a requirement at that stage in the competition).

There is limited evidence that the Prize raised awareness about NRW issues with the majority of communications activity focused on prize launch and award.

Equity considerations did not come into play until Phase 3

While Equity considerations were an explicit requirement for Phase 3, the solutions supported by Dreampipe II (closing as it did at the end of Phase 2) did not have to consider distributional impacts. This was a deliberate decision by the Prize Team to maximise the chances of achieving the Prize’s overall goal, to uncover workable, replicable solutions to the challenge of financing NRW reduction in developing countries.

However, it raises the question as to whether prize programmes that plan to have development outcomes should explicitly require solvers to take distributional impacts into account at every stage, given that in multi-stage prizes, each stage might not go ahead.

Assessing VFM of a multi-stage prize that did not complete is problematic

Our VFM assessment was only able to cover the value obtained from Dreampipe II against the Prize Team’s expectations of the first two phases of Dreampipe II (business plans and demonstration projects). However, in their design of the prize, the Prize Team expected greater value to come once the expansion projects had been agreed to (Phase 3, Fully Structured Deals), from the potential for replication.

Most of the activity to raise awareness of the issue of (financing) NRW reduction, for example, was planned for later in the Prize’s lifetime when it was anticipated that there would be demonstrable “solutions” to promote and expansion projects under way.

WHAT CAN BE LEARNED FROM THE DREAMPIPE PRIZE?

At the end of this evaluation report, we propose a set of conclusions, lessons and recommendations, based on our findings, for consideration by DFID and the Ideas to Impact programme team, as well as others who may be interested in sponsoring or running prizes for development in similar contexts. We share here what we consider to be the most important messages to take away from the Dreampipe II experience. Conclusions, lessons and recommendations are highlighted in more detail at the end of the report.

An innovation inducement prize alone is not suitable for addressing the problem of financing NRW reduction in developing countries.

The barriers to entry to the Prize were high, due to the level of solver investment required, and the short timeframe for mobilisation and implementation by solvers. In the Prize Team’s view, a mixed approach, for example an initial grant followed by one or more Prize stages, with technical assistance provided throughout, might have seen better overall results. Remembering that Ideas to Impact is intended to be a learning programme about the value, as well as the appropriateness and practicalities, of using innovation prizes to achieve development outcomes, for this type of complex development problem, it may have been more appropriate to:

- invest in a feasibility study upfront across a number of countries;
- focus on one or a small number of countries for implementation, rather than having a global remit as Dreampipe did; and
- start the Prize with a competitive process to secure a start-up grant.

Running Dreampipe II has helped increase our understanding of the problem of financing NRW in developing countries and the appropriateness of prizes to solving it.

At the outset of Dreampipe II it was assumed that there would be non-traditional financing sources that would be willing to fund NRW reduction to be undertaken by utility companies in developing countries. Based on the Dreampipe II Prize experience, this assumption needs to be reconsidered. Although the Prize did not result in the surfacing of replicable solutions to the “problem”, Dreampipe II did further add to the knowledge base around the problem, and further confirmed the complexity of this.

For example, the existence of non-financial barriers to reducing NRW identified in Ideas to Impact’s initial research of the problem, was confirmed through this evaluation’s discovery that even once financing was potentially available to utilities for NRW reduction, they were not necessarily accepting of this. In other words, availability of funding did not automatically facilitate the utility undertaking more NRW reduction work.

The design of Dreampipe II was informed by the views of some of the key experts in the field, who strongly believed that the Prize would open the doors to non-traditional funding. The Prize Team were aware from the beginning that there would be challenges in achieving what the Prize set out to achieve. However, they maintain that there was no way to know without running the Prize what the nature and extent of these challenges would be. Dreampipe II has generated new learning about the problem, some potential case studies to support this, and a “good practice” methodology for how to judge the performance of NRW reduction projects in a comparable way. It is our recommendation that this learning be shared for greater value to be obtained from Dreampipe II.



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