

Global costs of attaining the Millennium Development Goal for water supply and sanitation

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Objective Target 10 of the Millennium Development Goals (MDGs) is to “halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation”. Because of its impacts on a range of diseases, it is a health-related MDG target. This study presents cost estimates of attaining MDG target 10.

Methods We estimate the population to be covered to attain the MDG target using data on household use of improved water and sanitation for 1990 and 2004, and taking into account population growth. We assume this estimate is achieved in equal annual increments from the base year, 2005, until 2014. Costs per capita for investment and recurrent costs are applied. Country data is aggregated to 11 WHO developing country subregions and globally.

Findings Estimated spending required in developing countries on new coverage to meet the MDG target is US\$ 42 billion for water and US\$ 142 billion for sanitation, a combined annual equivalent of US\$ 18 billion. The cost of maintaining existing services totals an additional US\$ 322 billion for water supply and US\$ 216 billion for sanitation, a combined annual equivalent of US\$ 54 billion. Spending for new coverage is largely rural (64%), while for maintaining existing coverage it is largely urban (73%). Additional programme costs, incurred administratively outside the point of delivery of interventions, of between 10% and 30% are required for effective implementation.

Conclusion In assessing financing requirements, estimates of cost should include the operation, maintenance and replacement of existing coverage as well as new services and programme costs. Country-level costing studies are needed to guide sector financing.

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Une traduction en français de ce résumé figure à la fin de l'article. Al final del artículo se facilita una traducción al español. الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

Millennium Development Goal (MDG) 7 addresses environmental sustainability, with a target (target 10) to “halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation”.¹ Progress towards target 10 contributes significantly to the reduction of child mortality (target 5), major infectious diseases (target 8), maternal health (target 6) and quality of life of slum populations (target 11). It also contributes to gender equality and empowers women, and is linked to school enrolment and attendance, especially of girls (goal 3). Meeting the target would contribute to reducing poverty (target 1) and hunger (target 2) through use of water supply in industry and agriculture, saving productive time in accessing closer water sources and

sanitation facilities, and contributing to workforce health. Importantly, improved water supply and sanitation promotes economic equity since the unserved tend to be the poorer and more vulnerable.

In working towards the MDG target for water and sanitation, understanding resource requirements, resource gaps and where resources need to be deployed are critical. Corresponding assessments need to be based on reasonable estimates at global, regional and country levels.² Furthermore, comparing estimated finances required to existing funding levels helps to mobilize resources and to direct efforts to specific contexts (e.g. rural or urban) and to countries that are not meeting the MDG targets.³

Since 2000, studies have estimated the cost of attaining one or both of the components of the target for wa-

ter and sanitation at the global^{4–8} and regional^{2,9,10} levels. Reviews have compared these, which are in the range of US\$ 9 to 30 billion per year at the global level.^{11,12} This wide range is largely explained by the different methodologies and unit cost assumptions. Different approaches to incremental improvement and on adequate service levels also contribute to the differences. Most studies have ignored the costs of maintaining existing coverage levels (the costs of operating, maintaining, monitoring and replacing existing infrastructure and facilities) – these are especially important as the global stock of assets increases and in the light of reports indicating wide variability on effective “working life”. Toubkiss concludes, based on global cost studies, that “approximately US\$ 10 billion per year would be required to supply low-cost water and sanitation

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services to people who are not currently supplied, and a further US\$ 15 to 20 billion a year to provide them with a higher level of service *and to maintain current levels of service to people who are already supplied* (our emphasis).

Therefore, future financing studies should consider costs of operation, maintenance and replacement of existing as well as new water and sanitation infrastructure and facilities.¹² A major component of variability for sanitation is technology choice: a low-cost household improved latrine can provide both safety and privacy, yet waterborne sewerage must also include the cost of treatment to reduce health and environmental risks from the discharged wastewater. Thus Toubkiss concludes that in addition to the above costs “up to US\$ 80 billion is projected solely for collecting and treating household wastewater”.¹²

While coverage has been advancing in many countries, recent estimates consistently show the sanitation component of the target to be significantly off-track, with a projected shortfall of 550 million people in 2015 from target achievement.³ The drinking water component, while formally on-track (within 5% of target), is at the bottom limit of that range with prospects deteriorating.¹³ Uneven progress between rural and urban populations is also often cited, and the lower baseline in rural compared to urban areas is well documented.¹⁴ The importance of this is reflected in the fact that, uniquely among MDG indicators, rural–urban disaggregation is specified in the indicator definition, although there is no clear agreement that the target itself applies separately to rural and urban areas. Since unit costs, feasible technologies and population growth differ between rural and urban areas, these factors have a significant impact on cost estimates. Finally, costs and benefits depend on technology choice, from the high-technology, high-cost options (e.g. piped household connection) to low-technology, low-cost options (e.g. water hauled, pit latrine). However, cost estimates should use realistic assumptions for what types of improvement the targeted population receives.

This paper presents new global and regional estimates of the cost of attaining MDG target 10, using updated data inputs and showing the range of costs based on different assumptions. It also provides policy-relevant cost disaggre-

gations, including breakdown between water and sanitation, rural and urban, capital and recurrent, and existing and new coverage. This paper builds on the lessons learned from the review conducted by the World Water Council,¹² and uses the general methodology of the WHO global cost–benefit analysis on attaining MDG target 10 and universal coverage.⁵ Two recent papers on cost-effectiveness analysis¹⁵ and cost–benefit analysis¹⁶ based on the WHO study have been published.

Methods

Water and sanitation coverage

The base coverage year for MDG target 10 is 1990. Water and sanitation coverage estimates are obtained from the WHO/UNICEF (United Nations Children’s Fund) Joint Monitoring Programme (JMP) for Water Supply and Sanitation based on current JMP classifications.¹⁴ JMP classifies as “improved” water supply: piped water into dwelling, plot or yard; public tap; tubewell or borehole; protected dug well or spring; and collected rainwater. To be classified as improved, at least 20 litres per capita per day from a protected source within one kilometre of the user’s dwelling is required. The classification of improved sanitation comprises flush or pour-flush toilet to piped sewer system, septic tank or pit latrine; a ventilated improved pit-latraine (VIP); pit latrine with slab; or composting toilet.

This study includes all countries where coverage estimates are available for both 1990 and 2004 (<http://www.wssinfo.org>) to enable estimation of the target coverage in 2015 and remaining population to be covered to meet the MDG target. For some countries no breakdown is available between house connection and other improved sources; for these, assumptions are made based on regional averages. This study presents the costs of attaining the MDG target in rural and urban areas separately and together, based on application of the target separately to rural and urban populations.

This analysis assumes that new coverage starts to be delivered at the start of 2005 and is completed by the end of 2014, and that one tenth of the population to be covered (including population growth estimates) receives services each year. This assumption of

gradual constant scaling-up is the most operationally feasible.

The focus of the study is on developing countries, which WHO categorizes in eleven subregions (<http://www.who.int/choice/demography/en/>). Completeness of coverage data for water and sanitation varies, so cost estimates are based on different country samples: 91 countries for water (combined population of 5.84 billion in 2015) and 94 countries for sanitation (combined population of 5.68 billion in 2015).

Increases in the population between 1990 and 2015 must also be covered to meet the MDG target. However, not all population increments are unserved, especially for non-piped water interventions where new houses may have access to existing community sources. Therefore, population growth between 2004 and 2015 is allocated to improved and unimproved based on the distribution between improved and unimproved coverage in 2004. This represents a slightly optimistic assumption, given global trends towards decreasing household size. Globally 420 million people need improved water access and 1.052 billion people need improved sanitation systems between the years 2005 and 2014 to meet MDG target 10.

The interventions

For each country, and for rural and urban areas separately, populations were assumed to receive house connection and “other improvement” based on the distribution of populations between these two categories in 2004. Those receiving “other improvement” were divided equally between major non-household-connection options for water (standpost, borehole, dug well and rainwater) and sanitation (septic tank, pour-flush, VIP and simple pit latrine).

To take into account periodic replacement of existing water and sanitation facilities, this study assumes a length of life of house connection (both piped water and sewerage) of 40 years, and “other improvement” of 20 years. For the estimation of investment costs, 1/40 of those with house connection and 1/20 of those with other improvement are assumed to incur investment costs per capita every year from 2005 to 2014. Recurrent costs of existing facilities are estimated on the same basis as new coverage (see below).

Costs

Unit costs of water and sanitation improvement are applied to the population to be covered under the MDG targets to estimate total costs. All costs are updated to the year 2005 and presented in United States dollars (US\$) using an average gross domestic product (GDP) deflator of 10% per annum. Unit costs for capital investments are available per person covered for the length of life of the selected technology, while recurrent costs are estimated on a cost per person per year basis. Unit capital (investment) costs are sourced from the latest available global cost survey reported in the 2000 Global Assessment Report of the WHO/UNICEF JMP¹⁷ and updated to 2005 prices. Initial installation costs of household water connection varies by region between US\$ 148 and US\$ 232 per capita, while for sewerage this cost is US\$ 193 to US\$ 258. Initial installation costs of community water improvement options are considerably less, varying by region from US\$ 50 to US\$ 72 per capita, while the costs of non-piped options for sanitation vary from US\$ 93 to US\$ 134.

Recurrent costs comprise operation and maintenance (O&M), surveillance and education. Previous costing studies were found to make similar assumptions for annual recurrent cost as a percentage of capital cost,¹² and assumptions used were similar to those in the previous WHO study: annual O&M costs from 5% to 10% of capital cost for low-technology options, water source protection an additional from 5% to 10% of capital cost per year for all options, and education for sanitation interventions 5% of capital cost per year.^{5,15,16} Costs of household piped water were based on regional average treatment and distribution cost of between US\$ 0.20 and US\$ 0.30 per cubic metre¹⁷ and average per-capita consumption per year.⁵ Costs of sewerage were based on regional average treatment costs of between US\$ 0.15 and US\$ 0.20 per cubic metre¹⁷ and average discharge per capita per year.⁵ Annual recurrent costs of household piped water vary by region between US\$ 9.6 and US\$ 14.6 per capita, while for sanitation this cost is US\$ 8.2 to US\$ 11.0. Annual recurrent costs of non-piped water improvement options are considerably less, and vary between regional averages US\$ 0.4 and US\$ 0.5 per capita, while for sanitation this cost is US\$ 4.7 to US\$ 5.0. These

recurrent costs were applied to the total populations covered with each improvement option in each year from 2004 to 2015.

An exhaustive costing of water and sanitation interventions would take into account programme costs, which include costs incurred at the administrative district, provincial or central level and those incurred at a level other than the intervention delivery point.¹⁸ For health interventions, programme costs have been shown to vary considerably between types of intervention and WHO world subregions, between just a few percent and 100%.¹⁸ In the published economic literature on water and sanitation, no estimates have been presented on programme costs or their percent contribution to total intervention costs. JMP estimates of unit investment costs of water and sanitation interventions do not include programme costs.¹⁷ Donors in the sector typically allow between 10% and 20% of project budget for "management" costs, but this may not reflect the costs of delivery of services. Hence, due to the high degree of uncertainty of actual programme costs, results are presented without programme costs in the base case, and with different assumptions in scenario analysis.

Alternative scenarios

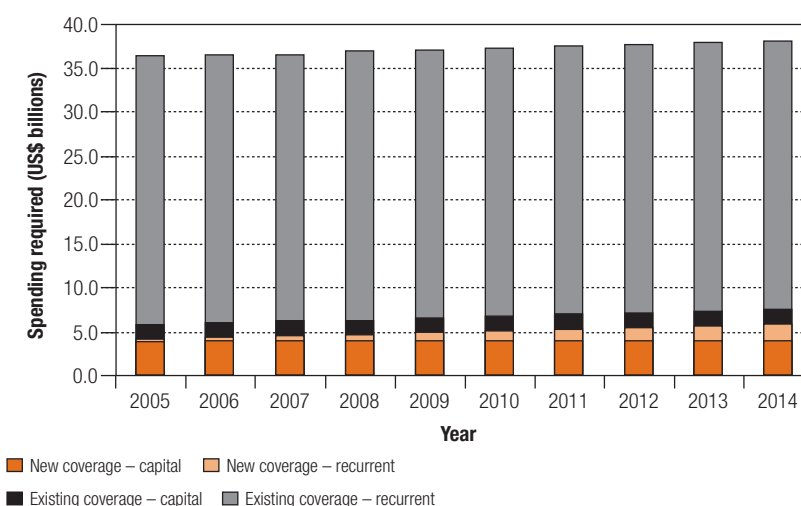
Three high-cost scenarios were run: scenario 1 (target population all receive a house connection); scenario 2 (high unit costs^{4,6-8}); scenario 3 combines 1 and 2 to give an upper bound on the

cost estimates. Three low-cost scenarios were also run: scenario 4 (target population receives low-cost improvement options); scenario 5 (low unit costs of improvement options); and scenario 6 (combines scenarios 4 and 5 to give a lower bound on the cost estimates). Scenario 7 does not distinguish between rural and urban achievement, and these populations receive improvements according to existing rural/urban distribution of improved facility. Scenario 8 assumes all population growth between 2005 and 2014 falls into the unimproved category, thus increasing the population to be covered. Scenarios 9, 10 and 11 add assumed programme costs of 10%, 20% and 30%, respectively.

Results

The estimated total spending, excluding programme costs, required in developing countries to meet the water component of the MDG target is US\$ 42 billion, while for sanitation it is US\$ 142 billion. This translates to per-capita spending of US\$ 8 for water and US\$ 28 for sanitation. Annually, this translates to roughly US\$ 4 billion for water supply and US\$ 14 for sanitation, an annual combined total of US\$ 18 billion. Developing countries in the WHO Western Pacific Region need 48% of the total spending to meet the MDG target for water, followed by 28% for the WHO African Region (strata D plus E). For sanitation the picture is different, with the WHO Western Pacific Region

Fig. 1. Spending required on new and existing water facilities from 2005 until 2015 to meet Millennium Development Goal target 10, excluding programme costs



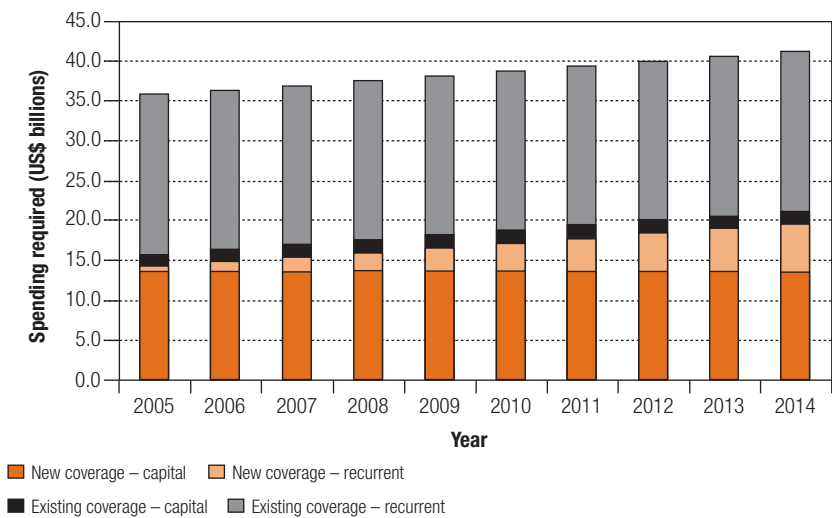
and WHO South-East Asia strata D requiring 30% of total spending each, followed by the WHO African Region needing 24%.

In terms of the estimated total spending required, including maintaining and replacing existing infrastructure and facilities and extending coverage to existing and future increases in population, spending on water and sanitation is roughly equal at US\$ 360 billion each, or US\$ 36 billion each annually from 2005 to 2014. The WHO Western Pacific Region accounts for about a third of the global costs. These results suggest that total spending on water to increase and maintain coverage to meet the MDG target should be distributed as follows: urban (68%) and rural areas (32%); recurrent (84%) and investment costs (16%); and population already covered (88%) and new coverage (12%). For sanitation, these figures are lower: urban areas take 59% of the share, recurrent costs 57% and population already covered 60%. This is largely because present levels of sanitation coverage are lower than for water. Some interregional variation exists in these shares.

Fig. 1 and Fig. 2 indicate the total spending requirements from 2005 to 2015 by year. Overall spending on water and sanitation should increase over this period only marginally from around US\$ 72 billion to US\$ 80 billion annually. For water supply, over three-quarters of the overall spending is for operating, maintaining and replacing existing facilities. For sanitation, this figure is roughly one-half. This difference between water supply and sanitation is largely explained by the lower baseline and therefore larger number of persons or households to achieve coverage for sanitation as opposed to water. Fig. 1 and Fig. 2 also illustrate that for new water and sanitation coverage, the large share of costs is on capital items, while for existing water and sanitation coverage, the large share of costs is on recurrent items.

Table 1 summarizes the results for different scenarios. When high-technology options are compared to low-technology options, total costs of attaining the water and sanitation target ranges from US\$ 135 billion (scenario 4) to US\$ 327 billion (scenario 1), compared to the base case result of US\$ 184 billion. Using high unit cost assumptions in scenario 2 gives a high range similar to scenario 1, while the

Fig. 2. Spending required on new and existing sanitation facilities from 2005 until 2015 to meet Millennium Development Goal target 10, excluding programme costs



low unit cost assumptions give a lower range of US\$ 94 billion. Combining the two high- and low-cost scenarios leads to estimated global cost bounds from US\$ 88 to US\$ 665 billion, or annually US\$ 9 to US\$ 66 billion.

Assuming new coverage distribution to rural and urban areas occurs along historical lines (scenario 7) increases costs 13% to US\$ 208. This is largely due to the higher costs of extending coverage to urban areas, where more households receive piped connections. Assuming the increments in population between 2005 and 2014 are all allocated to unimproved water and sanitation, scenario 8 shows a considerable increase in costs for new coverage to US\$ 341 billion, but a smaller increase in combined costs of new and existing of US\$ 799 billion, compared to US\$ 722 billion in the base case.

Including programme costs contributes an additional 10%, increases total costs to US\$ 794 billion; this increases to US\$ 866 billion at 20% and US\$ 938 billion at 30%. Actual programme costs are highly uncertain.

Discussion

This study provides more updated and comprehensive figures than have been previously available of the costs of attaining the MDG target for water and sanitation. From 2005 to 2014 approximately US\$ 70 billion needs to be spent annually on water and sanitation in the countries included in this analy-

sis, of which US\$ 18 billion is on increasing coverage to the currently unserved population, and US\$ 52 billion is on maintaining and renewing existing facilities for populations already with water supply or sanitation coverage. This US\$ 70 billion price tag translates to a developing region average per-capita spending requirement of US\$ 120 over a 10-year period (2005 to 2015), or US\$ 12 per capita annually. Given the lack of up-to-date data on actual combined spending by governments and households on water supply and sanitation in developing countries, it is not possible to estimate the current financing gap at the global level. These results compare with previous estimates of the annual investment costs of increasing coverage to meet the water and sanitation MDG target, which have been variously estimated at US\$ 9 billion,⁸ US\$ 11.3 billion,⁵ US\$ 18 billion⁶ and US\$ 30 billion.^{4,7}

These results highlight an important policy issue regarding the investment required to prevent the existing covered population from falling back into the unimproved coverage category, and to ensure the ongoing maintenance of these improved facilities to get maximum value from them. This hidden cost of achieving the MDG target adds considerably to the overall price tag. On the other hand, focusing future programmes on low-technology, low-cost options could reduce costs considerably. In considering low-cost options, it should be noted that they

Table 1. Summary of spending on water and sanitation to meet Millennium Development Goals (MDGs) under different scenarios

Scenario	Water (US\$ billion)		Sanitation (US\$ billion)		Water and sanitation (US\$ billion)	
	New	Total ^a	New	Total ^b	New	Total ^c
Base case	42	364	142	358	184	722
1. All HC	71	393	256	472	327	865
2. High unit costs	79	401	245	461	324	862
3. All HC & high unit costs	142	464	522	738	665	1203
4. All non-HC	23	345	113	329	135	673
5. Low unit costs	37	359	57	273	94	632
6. All non-HC & low unit costs	20	342	68	284	88	626
7. No rural/urban MDG target	46	368	162	378	208	746
8. All population increments categorized as unimproved	121	397	220	401	341	799
9. Programme costs, add 10%	46	400	156	394	202	794
10. Programme costs, add 20%	50	437	170	430	221	866
11. Programme costs, add 30%	54	473	185	465	239	938

HC, house connection (water and/or sanitation); non-HC, other improvements outlined in text.

^a In scenarios 1–7, this is the sum of new coverage column plus US\$ 322 billion for existing facilities. For scenarios 8–11, the cost of existing facilities is different.

^b In scenarios 1–7, this is the sum of new coverage column plus US\$ 216 billion for existing facilities. For scenarios 8–11, the cost of existing facilities is different.

^c In scenarios 1–7, this is the sum of new coverage column plus US\$ 538 billion for existing facilities. For scenarios 8–11, the cost of existing facilities is different.

may not yield comparable health and environmental benefits, and may not receive the same demand from users. Furthermore, household piped water is justified for the additional time savings from water haulage and the benefits of increased water availability for productive domestic or small-scale commercial uses that many populations demand and are willing to pay for.^{5,15,16} Hence, given that the level of benefits will vary between different intervention options, decisions should be based not on the comparative costs and benefits of the different options, and the demand and user preferences for those options.^{19–21} Previous global and regional cost-benefit analysis has shown the value of benefits associated with increasing coverage of improved water supply and sanitation was of the order of US\$ 3 to US\$ 34 per dollar invested.^{5,16}

This analysis has revealed that there is an enormous overall financing gap at the global level. Recent comprehensive data on expenditure at this level is lacking, and is especially weak for household and nongovernmental organization (NGO) spending in comparison with that derived from government and international assistance. JMP estimates that in the 1990s water received US\$ 12.6 billion annually and sanitation US\$ 3.1 billion annually from government and external support agencies.¹⁷ The Global Water Partnership estimates

US\$ 14 billion annually for drinking water and sanitation combined.⁴ These estimates fall far short of the annual US\$ 70 billion or more that is estimated to be required at global level, although this figure includes household spending. Estimates of household spending on water and sanitation in non-OECD (Organisation for Economic Co-operation and Development) countries are unavailable.

Cost studies also indicate the greatest shortfalls where new financing should be targeted. A significant proportion of the funding for increased coverage is required for investment purposes in rural areas in Asia and Africa. Combined water and sanitation per capita spending for increased coverage over the years 2005–2015 is highest in AFR-D (US\$ 67), followed by AFR-E (US\$ 63), WPR-B (US\$ 40), AMR-D (US\$ 38), SEAR-D (US\$ 33) and SEAR-B (US\$ 26), see <http://www.who.int/choice/demography/en/> for definition of WHO subregions; the developing region average is US\$ 36 per capita. Conversely, increased funding made available for existing coverage is needed in urban areas, and with a more balanced regional distribution (that is, higher contribution from the WHO Americas and Eastern Mediterranean Regions).

Cost estimates presented in this study should still be interpreted with caution. The cost results are only as

good as the information feeding into the quantitative model and as the model's assumptions. Major uncertainties still exist, such as the lack of representative unit costs of diverse water and sanitation improvements for different regions, lack of distinction in unit costs between rural and urban areas, lack of globally compiled data on water and sanitation improvement options chosen by governments and households, and the inconsistency in coverage rates revealed by different household surveys applied at country level. More detailed studies are required to produce more precise estimates to feed into national decisions on financing and intervention selection, using local unit cost data. To this end, a new set of water and sanitation costing tools is available from the World Health Organization. ■

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Résumé

Coûts globaux de la réalisation de l'objectif du Millénaire pour le développement relatif à l'approvisionnement en eau et à l'assainissement

Objectif La cible 10 des objectifs du Millénaire pour le développement (OMD) est de « réduire de moitié, d'ici à 2015, le pourcentage de la population qui n'a pas accès de façon durable à un approvisionnement en eau de boisson salubre et à des services d'assainissement de base ». En raison de son impact sur une série de maladies, c'est un OMD en rapport avec la santé. La présente étude fournit une estimation des coûts pour réaliser la cible 10 des OMD.

Méthodes Nous avons estimé la population à couvrir pour atteindre cette cible à partir des données sur l'utilisation par les ménages de sources d'eau et d'assainissements améliorés en 1990 et 2004, en tenant compte de la croissance de la population. Nous avons supposé que cette estimation avait été atteinte par incréments annuels de l'année de référence 2005 jusqu'en 2014. Nous avons appliqué les coûts d'investissement et de fonctionnement par habitant. Nous avons agrégé les données nationales pour les 11 sous-régions de développement de l'OMS et pour l'ensemble du monde.

Résultats Nous avons estimé à US \$ 42 milliards pour l'eau et à

US \$ 142 milliards pour l'assainissement, soit au total un équivalent annuel de US \$ 18 milliards, les dépenses nécessaires dans les pays en développement pour étendre la couverture de manière à atteindre la cible 10. Le maintien des services existants nécessite US \$ 322 milliards supplémentaires pour l'approvisionnement en eau et US \$ 216 milliards pour l'assainissement, soit au total US \$ 54 milliards par an. Les dépenses pour étendre la couverture bénéficieront principalement au ruraux (64 %), tandis que celles consacrées au maintien de la couverture existante profiteront largement aux urbains (73 %). Une mise en œuvre efficace du programme imposera un supplément de dépenses programmatiques de 10 à 30 % pour couvrir des coûts administratifs en dehors du point de délivrance des interventions.

Conclusion Dans l'évaluation des besoins financiers, il faut estimer les coûts de fonctionnement, de maintien et de remplacement de la couverture existante, ainsi que les coûts de nouveaux services et les coûts programmatiques. Des études de coûts au niveau national sont nécessaires pour guider le secteur financier.

Resumen

Costos mundiales del logro del Objetivo de Desarrollo del Milenio sobre el abastecimiento de agua y el saneamiento

Objetivo La meta 10 de los Objetivos de Desarrollo del Milenio (ODM) consiste en «reducir a la mitad para el año 2015 el porcentaje de personas sin acceso sostenible al agua potable y al saneamiento básico». Debido a su repercusión en un amplio espectro de enfermedades, se trata de una de las metas de los ODM relacionadas con la salud. En este estudio se presentan estimaciones de los costos de alcanzar la meta 10 de los ODM.

Métodos Estimamos la población a la que dar cobertura para lograr la meta de los ODM a partir de datos relativos al uso doméstico de los sistemas mejorados de abastecimiento de agua y saneamiento entre 1990 y 2004, teniendo en cuenta el crecimiento de la población. Asumimos que esa estimación corresponde a incrementos anuales idénticos desde el año base, 2005, hasta 2014, y se aplicaron los costos por habitante para la inversión y los gastos ordinarios. Los datos de los países se agregaron para 11 subregiones de países en desarrollo de la OMS y para todo el mundo.

Resultados El gasto estimado requerido en los países en desarrollo para asegurar la nueva cobertura necesaria a fin de

alcanzar la meta de los ODM asciende a US\$ 42 000 millones para el agua y US\$ 142 000 millones para el saneamiento, lo que combinado arroja una cifra anual de US\$ 18 000 millones. El costo de mantener los servicios existentes totaliza otros US \$ 322 000 millones para el abastecimiento de agua y US\$ 216 000 millones para el saneamiento, esto es, sumándolos, el equivalente anual a US\$ 54 000 millones. El gasto para nuevas coberturas se centra sobre todo en las zonas rurales (64%), mientras que el destinado a mantener la cobertura existente se centra fundamentalmente en las urbanas (73%). Una implementación eficaz exige además unos gastos programáticos de entre el 10% y el 30% en concepto de apoyo administrativo fuera del punto de las intervenciones.

Conclusión A la hora de evaluar las necesidades financieras, las estimaciones de costos deberían abarcar el funcionamiento, el mantenimiento y el reemplazamiento de la cobertura existente, así como nuevos servicios y gastos programáticos. Es preciso realizar estudios de estimación de los costos a nivel de país para orientar la financiación sectorial.

ملخص

تكاليف بلوغ هدف توفير إمدادات المياه والصرف الصحي على المستوى العالمي، في إطار المرامي الإنمائية للألفية

الطريقة: بُغية تقدير السكان المطلوب تغطيتهم بهذه الخدمات، لبلوغ هذا الهدف، استخدم الباحثون البيانات الخاصة باستخدام الأسر للمياه ومرافق الصرف الصحي المحسنة، لعامي 1990 و2004، مع أخذ عنصر النمو السكاني في الحسبان. وافترض الباحثون أن هذه التقديرات تحدث بزيادات سنوية متساوية اعتباراً من سنة الأساس، وهي 2005 حتى السنة 2014. وطُبقت في ذلك المعطيات الخاصة بحصص الفرد في تكاليف الاستثمار والتكاليف

الغرض: ينص الهدف العاشر من الأهداف الإنمائية للألفية على ((أن تخفّف إلى النصف، بحلول عام 2015، نسبة السكان الذين لا يستطيعون الحصول، بشكل مستدام، على المياه الصالحة للشرب ولا تتوافر لهم مرافق الصرف الصحي الأساسية)). ونظراً لما يسببه ذلك من أمراض كثيرة، فإن هذا الهدف هو واحد من أهداف الألفية الإنمائية المتعلقة بالصحة. وتقدّم هذه الدراسة تقديرات للتكاليف اللازمة لبلوغ الهدف العاشر من هذه الأهداف.

الجزء الأكبر من إنفاق صيانة المرافق القائمة إلى المناطق الحضرية (73%). وهناك تكاليف إدارية إضافية تقع خارج نطاق إجراء التدخلات، تتراوح بين 10% و30%، وذلك لضمان التنفيذ الفعّال للبرنامج. الاستنتاج: ينبغي، عند تقدير متطلبات التمويل، أن تشمل هذه التقديرات تكاليف العملية نفسها، والصيانة، والإحلال والتجديد للمرافق القائمة، علاوة على تكاليف الخدمات والبرامج الجديدة. والحاجة قائمة لإجراء دراسات لتقدير التكاليف على مستوى البلدان من أجل توجيه وإرشاد عملية تمويل القطاعات.

المتكررة. وجمعت البيانات بحيث تمثل البلدان النامية في 11 منطقة دون إقليمية وفقاً لتصنيف منظمة الصحة العالمية، وعلى المستوى العالمي. **الموجودات:** تقدّر النفقات المطلوبة لعمل تغطية جديدة بالمرافق في البلدان النامية لبلوغ هذا الهدف بـ 42 بليون دولار أمريكي للمياه، و142 بليوناً للصرف الصحي، بما يوازي 18 بليوناً سنوياً للثلاثين معاً. ويبلغ إجمالي تكلفة صيانة الخدمات القائمة 322 بليوناً أخرى بالنسبة للمياه، و216 بليوناً للصرف الصحي، بما يوازي 54 بليوناً سنوياً للثلاثين معاً. ويتجه الجزء الأكبر من الإنفاق لعمل تغطية جديدة، إلى المناطق الريفية (64%)، في حين يتجه

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