

**INSTITUTIONAL ASSESSMENT FOR CAPACITY DEVELOPMENT IN WaDImena NATIONS:
SUMMARY REPORT**

by
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No one denies that Water Demand Management (WDM) will play a greater role than it has to now in water management at all levels of government in the Middle East and North Africa (MENA). However, what kinds of WDM are most needed, how they can be most effectively delivered, and whether programming should differ in urban and in rural areas are all issues that are still under debate. This report responds to two critical questions that have been posed by *WaDImena* (see box) as a way to explore those issues:

The Regional Water Demand Initiative (WaDImena) aims to promote effective water governance by enhancing water-use efficiency, equity and sustainability in the countries of MENA region. WaDImena is a five-year project coordinated by the International Development Research Centre (IDRC) with support from the Canadian International Development Agency (CIDA) and the International Fund for Agricultural Development (IFAD). A number of programming components comprise WaDImena including applied research and field-level pilot activities, regional exchanges, capacity development and knowledge networking.
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- Analyze the needs for capacity development for Water Demand Management for MENA nations in general, and, more specifically, for the nine nations on which *WaDImena* focuses (Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine, Syria, Tunisia and Yemen).
- Identify the types of institutional capacity development activities that *WaDImena* could most effectively deliver in these countries.

These tasks are explored within the broader goals of extending understanding of Water Demand Management (WDM) concepts and advancing WDM activities throughout MENA. The first section of the report describes the mission that was undertaken in preparation of the report. The next section reviews very briefly the state of WDM in MENA. The following section focuses directly on the two questions

posed above. And the last section looks at water information gaps that need to be filled in the near future, and at capacity development activities that might be considered in the longer term future.

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BACKGROUND AND GOALS OF THE MISSION

This report offers a summary of the second part of a two-part study commissioned by WaDImena. The first part is a desk study of the institutional characteristics that appear to be necessary for successful implementation of WDM in rural areas, along with ways in which institutions need to be designed and to act in order to achieve success, as shown by review of WDM institutions in several non-MENA nations.³ This, the report on the field study, looks directly at the MENA region, and at both urban and rural areas, but focuses through visits to three nations: Egypt, Jordan and Morocco. The full results of the desk study appear in a separate report to WaDImena.⁴

The three sites for field study were chosen because they cover the range of economic and geographic conditions found in MENA:

- Egypt has a large population and a diverse economy but is highly dependent on irrigated agriculture that is in turn dependent on one major source of water to absorb large parts of its labour force.
- Jordan, in stark contrast, has a small population and limited economic diversity, but it retains a significant agro-pastoral sector with chronic water scarcity.
- Morocco represents an intermediate case in both population size and economic diversity, but emphasizes large-scale irrigated agriculture drawing on multiple water sources.

The concept for the field visits is summarized in a briefing note, which is attached as Annex A. It is difficult to generalize about the nature of these visits. Some interviews lasted 15 minutes; others went on for several hours. The length depended largely on whether the visit seemed likely to produce useful information about WDM or about capabilities and capacities to deliver WDM capacity development activities, neither of which could be determined entirely in advance. In most cases, the mission ran out of time before running out of potential institutions to visit.

In the context of this report, WDM is much more than a set of tools to promote more efficient or more equitable uses of water. Rather, water demand management is seen as an option that is equally as important and equally as powerful as water supply management. As such, WDM becomes a governance concept that balances demands for, and supplies of, water in ways that contribute to sustainable and equitable development. Annex B presents a broad but operational definition of WDM that is consistent with this expanded role.

Reflecting the approach that treats WDM as a governance concept, this report devotes more attention to the management of WDM than to the specific techniques that may be applied. In addition, a great deal of attention is devoted to getting senior managers in government, the private sector and even NGOs to recognize the importance of WDM

³ David B. Brooks and Sarah E. Wolfe. 2006. *Institutional Conditions for Effective Implementation of Water Demand Management and Institutional Assessment for Capacity Development in WaDImena Nations: Part One*. Cairo, Egypt: IDRC, WaDImena internal document

⁴ David B. Brooks and Hani Abu Qdais. 2006. *Institutional Conditions for Effective Implementation of Water Demand Management and Institutional Assessment for Capacity Development in WaDImena Nations: Part Two*. Cairo, Egypt: IDRC, WaDImena internal document.

(as opposed to simply requesting more water) – in effect, increasing the demand for water demand management.

IMPLEMENTATION OF WDM IN MENA

The desk study reviewed the state of WDM in MENA at the start of the new millennium. It concluded that:

“. . . water management was advancing rapidly in MENA, and that water *demand* management was also advancing but at a significantly slower rate – certainly without the breadth or depth required to cope with the increasingly difficult water situation occurring throughout the region. It was also evident that the main problem did not appear to lie with lack of tools or lack of good intentions but rather with lack of institutional capacity, capability and motivation – barriers that arise mainly from endogenous rather than exogenous forces.” (Emphasis in original.)⁵

At the same time, the report also suggested that the early years of the millennium “may mark a turning point in the approach to WDM in MENA.” Several factors are coming together to promote significant changes in both donor-funded and government-funded initiatives for WDM, and today’s modest changes are likely to be magnified in the near future. Certainly, technology for more efficient use of water is being adopted. Improved methods for drip and sprinkler irrigation, for leak detection, for recycling and reusing water, among other technical options, are all being reported across the region. However, even bigger changes are being implemented at the institutional level.

Water demand management has not typically been seen as a major strategy for water planning in MENA governments. This situation is changing. Today WDM is coming to be accepted as a key part of the overall strategy for integrated water resources management (IWRM). And more importantly, IWRM now appears as the core of newly developed or newly revised long-term water strategy documents. All three points are relatively recent: publication (or ongoing preparation) of national water strategies; presentation of IWRM as the guiding principle in that strategy; and explicit treatment of WDM as one of a few core components of IWRM.

Another change that is promoting more attention to WDM is the recognition in most MENA nations that they are approaching the end of their water supply opportunities. This shift has long been evident in a few countries, but, more typically, governments have tended to act as if future water demands could be satisfied mainly by new dams, deeper wells and longer pipelines – in other words, by supply side management. The growing efforts toward decentralization of responsibility for water management at local levels, and, even more, the adoption of watershed-based management authorities in some nations, also allow for a greater role for WDM. With few exceptions, water-use decisions tend to be both more efficient and more equitable when taken close to the point at which the water is used. In some cases, decentralization of management responsibility is adopted specifically to give WDM a higher profile in the implementation of water policies based on IWRM.

⁵ *Op. cit.*, page 28.

Of course, the news about WDM in MENA is not all good. There are few agencies with an explicit mandate to deliver WDM programs, and the ones that do exist are not well funded. More commonly, all agencies have a general mandate for WDM as part of, or as an addition to, their ongoing responsibilities. Further, the agencies now mandated to work within a framework of IWRM (and, within IWRM, on WDM) are largely staffed by the same people who have spent their careers focusing on supply management, and on top-down directives extending, in some cases, right to the individual farm. We mean no disrespect to these individuals when we say that they are unlikely to promote the cause of WDM with the enthusiasm and the energy that it requires.

Finally, it is important to recognize that all MENA nations face difficult choices as they move toward more active implementation of WDM programs in rural areas. On the one hand, the great bulk of water use throughout MENA goes to agriculture, with typically 20% or less of the water delivered to all urban uses (residential, commercial, industrial and institutional). On the other hand, because of the close link between water use and livelihoods in rural areas, many more factors must be considered when implementing WDM activities in rural than in urban issues. In many cases the issue is less the need for WDM itself than the need for new concepts of rural development and of sustainable agriculture.

NEEDED CRITICAL FORMS OF CAPACITY DEVELOPMENT FOR WDM

Implicit in the questions posed before the field visits began are a number of criteria for selecting options for institutional capacity development for water demand management.

- First, and most obviously, the recommended capacity development activity should make a difference. It should result in the implementation of significant activities aimed at WDM, and those activities should in turn result in “savings” of water in one sense or another. (Annex B provides a longer definition of WDM.)
- Second, the proposed capacity development activity should be sustainable. There should be a reasonable likelihood that the kinds of capacity development, if not the specific modes and modules, would be continued after the conclusion of the *WaDImena* project.
- Third, the capacity development must be within the capability of both *WaDImena* and the host countries to deliver. Costs, capacity and capability are all relevant.
- Finally, *WaDImena* activities should not duplicate or conflict with work already in place in the region or already funded by other donors.

Of the wide range of options for capacity development that were considered over the course of this mission, two specific and complementary options turn out to be most promising:

- Delivery of a curriculum of courses lasting not more than six months in order to provide young professionals from a variety of disciplines with a good grounding in the theory and practice of water demand management and with the ability to

design and implement water demand management activities in their own countries.

- Delivery of short courses to explain the potential and the power of water demand management to division chiefs, directors and other senior staff of key ministries and agencies in each country.

Long-Term Course

At present, universities in MENA are not educating people about water demand management. (The sole exception is the WDM MSc. program at JUST in Irbid, Jordan.) Nor are governments building strong and sophisticated water demand management programs into their activities. These gaps do not mean that water demand management is not happening, and that university graduates know nothing of WDM. Engineers, natural resource economists, agronomists and the like are all made aware of the need to improve the efficiency with which water is used. References to the need to limit demands for water appear in senior level documents from government, and agencies commonly support activities that have an element of WDM. However, the gaps constrain the approach to WDM, and they limit its implementation to a few tools to cut water use. In too many cases, WDM is only a way of closing the gap in demand that cannot be (currently) filled by water supply projects. This perspective does little to support key goals of *WaDImena*, which include promoting broader understanding of the nature and the potential of WDM, and demonstrating how WDM can contribute to broader development goals.

A great opportunity exists to take professionals who already have at least a Bachelor's degree and to extend their knowledge by a 6-month intensive program on water demand management. Graduates of the program should receive a formal certificate or diploma from the institution at which they are studying, but the program should not be oriented to the granting of a graduate degree. Young professionals, many of whom will have found positions in government or the private sector or possibly in NGOs, could be released from their positions, or could afford to take time off, for six months, and that imaginative course design could leave them with an understanding of the enormous potential of water demand management not just as a way to save water, but as a major force in economic development (both urban and rural) and as a way to enhance equity in their countries. Participants must come away from the program with enthusiasm for, and a commitment to, water demand management.

Though much of the programming in the diploma course will be common to all participants, at least two streams should be considered, one oriented to urban uses of water and one to rural uses. As suggested above, there are important differences between water demand management in urban and in rural areas. This difference could be accommodated either by having one set of WDM courses that all participants take with another set of courses for each stream, or, alternatively, the courses could all be common but the graduation project described below could focus on WDM issues in urban uses or WDM in rural uses. (Because of possible complementarities in water use and re-use, we consider the distinction between urban and rural more useful than that between potable and irrigation. However, in those countries where the institutional structure follows the latter pattern, it can be adopted without great loss.)

In addition to the two primary streams for urban and rural water, a third stream could focus on education, with emphasis on ToT – Training of Teachers – for WDM activities. This option is discussed further below.

An obvious alternative approach to the six-month intensive course is a longer program that would result in a Master's degree in water demand management. This alternative is not recommended. It will require more time than young professionals are likely to be able to commit, and it will involve course requirements more appropriate to specific disciplines than to the multi-disciplinary nature of WDM. Current experience suggests that curricula to award advanced degrees in water demand management will not be very successful.

Water demand management should not be just a matter of book learning. Visits to smaller and larger water systems, and to more and less sophisticated irrigation systems, should be part of the program. One could also conceive of a diploma that requires each student to undertake and write up a specific effort at WDM in his or her own country, perhaps in the year following the six-month intensive course. However, it is premature to say whether such a mini-dissertation or graduation project on WDM should be a formal part of the program and a requirement for receipt of the diploma.

Short Courses

All the professional training in the world will do no good if the senior staffs in agencies, corporations and organizations have no interest in WDM. Senior staff must not only have interest in WDM, they have to appreciate the difference that can be made by applying different WDM activities and they must request appropriate activities from middle and junior staff. This is not at present the case, at least not in many places. Therefore, as the second component of needed capacity development in WDM is course of one to three days that is aimed at senior managers in government, private sector and non-governmental organizations and that will convey to them the importance and the potential of WDM.

Senior managers are generally short of time, and they want information and concepts delivered to them in ways that will enhance their careers and that will be easily remembered. If the longer diploma program emphasizes content, the short course must emphasize process. Delivery style will be critically important. For that reason, WaDImena should consider not only designing and developing appropriate materials for senior managers, including some that they can carry away when they finish the course, but also consider organizing a team of people (staffed from different MENA countries) who are skilled at communication and who can go from city to city and deliver the course.

The short course will have to be repeated, perhaps several times the first year, and once a year thereafter as new people are promoted to senior positions. There must be some commitment from each of the WaDImena nations to assist in promoting the course, and in insisting that senior managers do attend. They might also be asked to pay some of the on-location costs.

OTHER WAYS TO INCREASE CAPACITY FOR WDM

There is no magic wand that anyone can wave in order to make water demand management the primary way of delivering water services in MENA. The longer term and the short courses suggested above can help, but it will take time, and supplementary capacity development activities. More immediately, MENA nations need to fill some critical gaps in the information needed to manage effective programs in water demand management. Suggestions for these two areas are presented in this section.

Other Forms of Capacity Development

Several other approaches to capacity development, and different groups in need of capacity development, were considered, but were not, in the end, considered to be so important as those described in the previous section. However, this does not mean that these other approaches and groups should be entirely ignored, and the most interesting of them are briefly suggested below. We do not include among these ideas any technical training, such as plumbing or meter maintenance. Those operational capabilities are certainly needed throughout MENA, but they do not seem to be priorities for internationally funded WDM programs. If countries wish to develop those capabilities, they have adequate domestic resources and do not need the aid of donor agencies.

- It will be important to bring WDM as a potentially large factor in the water balance to the attention of members of Parliament, most of whom (as one person interviewed put it) still think of water management mainly in terms of cutting ribbons to open new supply projects. In conjunction with strong support from the Canadian embassy and perhaps other major donors or other initiatives, WaDImena may implement one-day conferences with the goal of making WDM a politically attractive and politically feasible choice. Such conferences would have to be held separately in each WaDImena nation, and in the capital of the nation, preferably in official rooms. A model for this sort of program could be found in the participation of Parliament members in Jordan in a one-day workshop on enforcing environmental laws and regulations that was funded by the Swiss Embassy.
- In every country visited, inappropriate or obsolete farming practices are responsible for a great part – commonly the largest part – of water inefficiency and direct water losses. The key issue lies with the continued use on most farms of inefficient irrigation techniques (farm level management). This problem is real, but the process of correction is complex. For one thing, the losses are highest in traditional farming areas, and much lower in newly developed areas or on the larger commercial farms where modern irrigation methods are being adopted. For another, irrigation water is free or barely covers O&M in MENA nations, and the shift to modern irrigation requires capital that is beyond the reach of most farmers. For all these reasons, the problem requires the kinds of local capacity development that lie well outside the scope of WaDImena; there are just too many farmers. The people closest to the farmers are their own organizations, plus the agricultural extension agents, most of whom are employees of the respective Departments of Agriculture and large donor agencies. Therefore, the most effective approach will be ToT – Teaching of Teachers – with emphasis on agricultural water use and rural water demand management in general.
- Every country in MENA suffers from inadequate management of water reticulation system, with evidence indicating high rates of leakage and theft, inaccurate metering (if meters exist at all), and disconnections between use rates and billing. Despite the obvious need, it is doubtful that these problems represent a major opportunity for capacity development. The technical methods for leak detection and for reduction of theft are widely known, and the benefit-cost ratios are strongly positive for any water utility, whether public or private, so long as it is made financially responsible for its operations. Self-interest alone will stimulate greater attention to this problem in the future, and particularly as utilities recognize that they will not be able to tap much new water.

- Finally, the approaches to capacity development and the specific activities for capacity development suggested in this report should find application outside the MENA region. WDM is sorely needed in all nations upstream on the Nile, and in francophone countries in West Africa. The possibility of sharing experience and even joint programs should be considered once capacity development activities by WaDImena have been in place for a year or two.

Information Gaps

MENA nations also suffer from a number of gaps in information that are either blocking the implementation or limiting the effectiveness of WDM activities. Some of these are important enough to be identified here, but no attempt is made to indicate how to fill the gaps:

- Few attempts are made in MENA to measure water use at the point of end-use and even fewer to measure end-use efficiency. In addition to these gaps in statistical data, there is also a need to develop indicators and benchmarks of success, so that those agencies promoting WDM can determine where the greatest challenges lie, and the extent to which existing activities are mitigating problems or realizing objectives. A small literature exists, but, to now, few if any nations in MENA seem to be taking up the challenge of applying them. At a minimum, a data base on water use (and re-use) that is common to all MENA countries should be developed and implemented as soon as possible.
- At present there exists little incentive for water utilities to implement WDM beyond those activities that provide greater revenue (as with leak detection or prevention of theft). In most cases, they exhibit little interest in how water is used inside a house or building or industry. If anything, utilities have a positive disincentive for WDM because they lose income when customers conserve water. Experiments are needed to find institutional ways for utilities to share in the gains from WDM so they are no longer trapped between requirements to be cost effective and income that depends on sales of water. Otherwise, they cannot be expected to have any enthusiasm for WDM.
- MENA nations know much less about groundwater resources than surface water. The gaps are partly physical, as with aquifer geometry and rates of replenishment, but they are at least as much institutional, as with measurement of pumping and control of drilling. As prices for surface water are raised or supplies otherwise constrained, larger and richer users will turn (indeed, are turning) to ground water. Unfortunately, there appears to be a lack of knowledge about how to design and build appropriate capacity and capability for groundwater management.
- Finally, it is commonly alleged what is really lacking in MENA is stronger enforcement of existing laws and regulations. It is not clear to what extent this allegation is true. However, it was said often enough to suggest that further investigation would be useful.

CONCLUSION

In conclusion, we hope that this report will help *WaDImena* and both decision makers and managers as they seek ways to increase the role that Water Demand Management does take, and could take, in their countries. Simply put, there is no alternative not just to WDM in MENA nations, but to very strong actions to promote, and where necessary enforce WDM. The issue is not whether but how: where, when, and, by no means least, by whom. Developing more capacity to conceive, design and implement water demand management – in effect, responding to the pair of questions cited at the start of this report – is the essential first step.

ANNEX A: BRIEFING NOTE SENT OUT IN ADVANCE OF THE MISSION

Dear Sir/Madam,

On behalf of the Regional Water Demand Management Initiative (*WaDImena*), we would like to thank you for agreeing to meet with us to discuss the role of your institution in water demand management. The issues that will be discussed during our visit are listed below. To be ready for the discussion, we would appreciate if you could read through. Providing any documents related to these issues will help in conducting the visit more efficiently.

We would also welcome any ideas that you may have of other institutions and individuals with whom we should meet.

What is *WaDImena*?

The Regional Water Demand Initiative for the Middle East and North Africa (*WaDImena*) is a collaborative project coordinated by regional office in Cairo of the International Development Research Centre⁶ and with financial support from the Canadian International Development Agency and the International Fund for Agricultural Development. *WaDImena* aims to promote water-use efficiency, equity and sustainability in the countries of the MENA region, through a series of applied research and pilot activities, capacity development, regional exchanges and knowledge networking. Please visit the website (www.idrc.ca/WaDImena) for more information on *WaDImena* and our work in the region. Please feel free to also contact Lorra Thompson, Project Coordinator (ltompson@idrc.org.eg) for details.

Purpose of Visit

The general objective of our mission to Jordan, Egypt and Morocco is to conduct a scoping mission of relevant water institutions in these countries to identify national, as well as regional capacity gaps in WDM and recommend practical actions and concrete activities for the effective institutional implementation of water demand management.

The specific objective of this institutional assessment is to seek a better understanding of the capacity needed of institutions working on WDM in the MENA region for effective implementation of WDM strategies.

As a first step, institutional mapping will be carried out to identify institutions working on WDM in each country. This will include both governmental and non-governmental institutions. Water Agencies (Ministries), Universities, Research Centers, NGOs and Donor Agencies will be among the institutions that will be visited in each country. Meeting with key persons in each institution will be arranged. In addition, visits to certain sites that demonstrate the application of WDM options should also take place, in order to get a hands-on and practical knowledge of some of the constraints and opportunities in the field.

⁶ The **International Development Research Centre** is a public corporation created by the Parliament of Canada in 1970 to help developing countries use science and technology to find practical, long-term solutions to the social, economic, and environmental problems they face. Support is directed toward developing an indigenous research capacity to sustain policies and technologies developing countries need to build healthier, more equitable, and more prosperous societies.

WaDImena defines water demand management simply as “any practice or policy that results in water being used in a more efficient, equitable and sustainable way”. We would also like to listen to your views on the understanding of the means by which water demand management strategies are implemented at the institutional level as well as understand better how this regional project can respond directly to your needs, once this institutional capacity assessment is complete.

For the purpose of the mission, we would like to seek responses to the following issues:

I. Introductory Information

- o Institution Category (i.e. Government, NGO, Research, .. etc)
- o Institutional definition of WDM
- o Options of WDM (in practice and policy) that are adopted by the institution and in which sector
- o Level of success in achieving goals of WDM programs and indicators of success used
- o Linkages with other institutions dealing with WDM both on local and international levels

II. Design and mandate of the Institution

- o Institutional organization structure and functions
- o Availability of documented institutional strategy
- o How the institution mission and goals supporting WDM
- o Flexibility of the organization structure to accommodate WDM changing needs
- o How centralized is decision making within the institution
- o Stakeholders their roles and participatory approach in decision making
- o Role of public private partnership

III. Institutional Enabling Environment

- o Adequacy of legal framework to carry WDM activities –challenges and opportunities of the existing national regulatory framework
- o Estimations of financing available for WDM within the institution
- o Availability of adequate and qualified human resources to promote WDM activities
- o Access to data and information and knowledge management
- o Research activities related to WDM
- o Availability and willingness to participate in a capacity building programs in WDM
- o Linkage with research community and utilization of scientific research in decision making related to WDM options
- o Forces in the internal institutional environment that may hinder the implementation of WDM program
- o Forces in the external institutional environment that may hinder the implementation of WDM program
- o Need for efforts to promote WDM at the national or local levels (What you need to meet your mandate?)

Thank you again very much for your time and efforts in assisting us with this task.

Yours sincerely, Hani Abu Qdais and David B. Brooks

ANNEX B: AN OPERATIONAL DEFINITION OF WATER DEMAND MANAGEMENT

Note: This definition was originally proposed to IDRC as part of a review of previous work on WDM in the region. It has subsequently been revised slightly and elaborated as a professional article, from which the following material is excerpted:⁷

A comprehensive definition of WDM must reflect both the series of steps that brings water from source to use and also the time and space dimensions of water use. Therefore, water demand management can be defined as any method -- whether technical, economic, administrative, financial or social -- that will accomplish one (or more) of the following five things:

1. reduce the quantity or quality of water required to accomplish a specific task;
2. adjust the nature of the task or the way it is undertaken so that it can be accomplished with less water or with lower quality water;
3. reduce the loss in quantity or quality of water as it flows from source through use to disposal;
4. shift the timing of use from peak to off-peak periods;
5. increase the ability of the water system to continue to serve society during times when water is in short supply.

In this five-part definition, quantity and quality of water are treated equally. The advantages of reducing the quantity of water used to achieve any service are obvious. However, losses in quality are almost equally important in physical and economic, and certainly in ecological, terms. Higher quality water can be used for many purposes and even substituted for lower quality water, but the reverse is not true. Lower quality water is not acceptable for many purposes without added costs for treatment and upgrading. In addition, because water is conveyed to us by systems with capacity limitations, and because system efficiencies generally decrease as capacity is strained, water demand management must also incorporate conveyance efficiency as it varies between times of high and low demands. Finally, sharp differentials between wet and dry seasons are typical of semi-arid areas. Even in humid areas, rainfall will vary by season, and sporadic droughts will occur. Therefore, demand management also includes methods that add resilience to water systems to permit them to cope with shortage.

Each of the five components of the definition implies the goal of saving water, or saving higher quality water. However, given the nature of developing nations, much of the "saved" water will immediately be used by others, such as women and small farmers, who previously had less water than they needed for their lives and their livelihoods. Such shifts in water use patterns that result in improved equity are important forms of water demand management even if they do not result in lower absolute levels of water use. Water demand management in developing countries is as much about equity as about efficiency.

⁷ David B. Brooks. 2006. An Operational Definition of Water Demand Management. *International Journal of Water Resources Development* 22(4) 521-28 (December).