Mubarak-Kohl Intiative for Dual System (MKI-DS)

The Mubarak Kohl Initiative – Dual System in Egypt:

An assessment of its impact on the school to work transition

gtz

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The Mubarak Kohl Initiative-Dual System in Egypt

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Abbreviations

BMZ	German Federal Ministry for Economic Cooperation and Development
DS	Dual System
EU TVET	European Union Technical and Vocational Education and Training
GD-VET	General Directorate Vocational Education Training
GTZ	German Technical Cooperation
HRDSC	Human Resource Development Service Center
IA	Investor Associations
ILO	International Labour Organisation
MKI-DS	Mubarak-Kohl Initiative Dual System
MKI-vetEP	MKI Vocational Education Training and Employment Programme
NCHRD	National Centre for Human Resources Development
OECD	Organisation for Economic Cooperation and Development
PPP	Public Private Partnership
PVTD	Productivity Vocational Training Department
RUDS	Regional Unit for Implementing the Dual System
TSS	Technical Secondary School

Executive Summary

Like other developing and industrialized countries, Egypt in the 1990s faced the challenge of improving the transition from school to work for its youth. The youth unemployment rate was 5 to 7 times that of adult rates signaling that youth 16 to 24 years of age faced considerable difficulty in moving from school to work as measured against youth in other countries where this ratio was lower.[1] While producing economic growth and jobs with good macroeconomic policies was one of the solutions to this problem, for youth the problem often went deeper to structural issues involving whether the skills they obtained in schools matched the needs of the market and how youth went about searching for work and the expectations they held for employment and wages.

Egypt launched economic reforms in 1991 that were intended to transform the economy from a state-controlled to an open market economy. As part of these reforms it took steps to address the youth employment problem. President Hosni Mubarak and German Chancellor Helmut Kohl agreed that year on a program of German technical cooperation that would help Egypt address weaknesses in its secondary technical education system and support economic reforms. A pilot program was introduced to adapt and test the principles of Germany's dual system in the Egyptian context. The Mubarak-Kohl Initiative-Dual System (MKI-DS) entered a preparatory phase the next year with a grant agreement between the German Federal Ministry of Economic Cooperation and Development and Egypt's Ministry of Education.

Like its dual system counterpart in Germany, the MKI-DS set out to establish a partnership between schools and employers to improve the skills needed for employment. Under the MKI-DS students were expected to spend two days per week in a secondary technical school, mainly acquiring knowledge of theory, while spending four days per week in a place of work developing practical skills and learning workplace behaviors. Students in a traditional technical secondary school (TSS) by comparison spent six days in the school for theory and practice. The MKI-DS was designed to improve the transition from school to work for Egyptian youths, measured by placement rates, by strengthening the link between the skills acquired in school and those sought by the labor market.

The adaptation of the German dual system to the Egyptian context was supported by German Federal Ministry for Economic Cooperation and Development through German technical cooperation (GTZ) in a partnership between Egypt's Ministry of Education and a newly emerging private sector created by economic reforms. The cooperation extended from 1994 to 2007. This review completed in 2010 uses a non-experimental approach to evaluate the MKI-DS. It examines program outcomes for students, employers, schools, and teachers. Interviews were conducted with a judgment sample of officials from MKI-DS schools, representatives of factories participating in the program, and officials responsible for the program in the Ministry of Education and private investor associations. Focus group discussions were held with employers, students, teachers and school officials.

The review is divided in two parts. The first asked respondents about the perceived impact of the program on the beneficiary group. The impacts examined for youths covered labor market outcomes in employment and earnings, but extended to other outcomes considered to be benefits for each group. The student responses were backed up by a tracer study conducted in 2009 following MKI-DS graduates into the labor market. The second part asked questions about the implementation of the program. The objective was to identify features of the program that worked

[1] UNdata 2009

well, but also features that impeded effective program implementation, and if addressed, could improve program outcomes. In addition to identifying steps that could be taken to strengthen MKI-DS, the review highlights lessons for German technical cooperation drawn from the Egyptian experience.

The Introduction of MKI-DS

Youth unemployment was a growing problem for Egypt in the early 1990s with the share of youth in the labor force increasing. The economy was expanding, but not producing the jobs needed to absorb the growing labor force. In better times, Egypt guaranteed public employment to young graduates of technical and higher education, but by the close of the 1980s, the policy ended and youth unemployment began to rise. Young women were especially affected by the loss of public sector jobs as they were clustered in these jobs. An estimated 80% of the unemployed in Egypt were in the 16 to 24 age group with young men outnumbering young women three to one, reflecting their higher labor force participation rate. Unemployment was higher among the better educated.

The MKI-DS was introduced in 1994 providing an alternative to general secondary and traditional technical secondary schools. Approximately two-thirds of secondary students or about 1.8 million youths attended a technical secondary school. The World Bank in a review of the education sector found technical education to be of low quality and relevance with a weak payoff in the labor market. These schools were under-funded, suffering from outdated curricula and equipment, and focused on theory taught by teachers with inadequate training and industrial experience. They operated in a climate of general distrust among employers. The MKI-DS with its engagement of the private sector and promise of improvements in the quality and relevance of training provided an opportunity to test a different approach to preparing youth for employment.

The problems faced by TSS were discouraging in their own right, but they were worsened by social attitudes toward technical schools and other forms of training. The segregation of Egyptian society along class lines with small upper and middle classes and large lower middle classes produced a strong social bias against technical education. This education was treated as second class education because of its weak connection with employment and earnings and its association with blue collar jobs. General education was preferred by families because it led to higher education and perceived higher earnings. This in turn affected social status and the marriage options available to youth. The social demand for higher education was significant as a result. The MKI-DS with its link to employment had the potential for changing attitudes toward technical education.

The MKI-DS employed the principles of the German dual system, but adapted this system to the institutional context of Egypt. The German dual system was built on three principles: duality, the primacy of crafts, and consensus. Duality involved sharing the responsibility for training between schools and employers. The primacy of crafts required enterprises to go beyond the specific skill needs of the firm to consider the broader needs of performing a craft to produce a more flexible workforce. The dual system required a consensus between schools and enterprises on standards and curriculum before government could approve a program. These principles were built into the MKI-DS along with the introduction of new institutions in the private sector that promoted the public-private partnership underpinning the MKI-DS.

A governance structure was created for the MKI-DS. Private Investor Associations located in different cities and governorates became partners with the Ministry of Education. The National Center for Human Resource Development (NCHRD) was formed to coordinate the provision of

training places, identify trades needed, and represent Investor Associations, while the General Directorate for Vocational Education and Training (GD-VET) represented the Ministry of Education. Under the NCHRD, there were Regional Units for the Dual System (RUDS), or Human Resource Development Service Centers (HRDSC) as they were called in some locations financed by employers with the responsibility to develop training places and supervise students in factories. The GD-VET implemented MKI-DS in selected schools. An Executive Council was created in 2010 by Ministerial Decree No. 106 with members from NCHRD and the Ministry to oversee the program and develop its policies.

The governance structure was unique to Egypt, but reflected the principles of the dual system with its partnership between employers and government for providing training. The GTZ offered technical support to the partnership helping develop occupational profiles, develop curricula and instructional packages, and train trainers. This support continued until 2007. By then, a legal framework had been established. The MKI-DS was no longer a development agency pilot, but a program fully owned and implemented by the Ministry of Education and the industrial partners. German support over the period from 1994 to 2007 totaled. 28.5 million Euros. Among the program's achievements as of 2009 were the following:

- Expansion of MKI-DS from an initial 3 city sites to its coverage of 22 out of Egypt's 27 governorates;[2]
- From just a few to 76 technical secondary schools identified as MKI-DS schools;
- 1,900 companies now provide training places for students;
- 24,000 graduates with 13% women;
- 13,000 trainees enrolled with 19% women;
- 32 occupational profiles have been developed with industry input.

Estimates for 2010 indicate that MKI-DS enrolments have grown to 10,200, a sharp increase from enrolments in 2009 of just over 5,900. The number of companies participating and schools involved is also expected to have grown.

Measuring the Impact of MKI-DS on Beneficiaries

A European Training Foundation study in 2007 called the MKI-DS an "island of excellence." This was based on a survey conducted in 2002 showing that 86% of companies offered employment contracts to MKI-DS graduates. The survey found 30% of the graduates employed, 40% continuing higher education, and 26% searching for work.[3] A 2009 survey conducted by CID Consulting for GTZ had similar findings. An ILO study in 2001 called MKI-DS an "innovative" program and acknowledged the potential of the program to provide modern segments of the economy with skills, but noted its limitations in reaching beyond the modern sector. It also cited the program's undefined legal status, high cost, gender balance, loss of graduates to higher education, and the potential of its trainees to displace other workers.

Some of these criticisms were valid at the time made, but were premature as improvements took place. Today, the program has been fully institutionalized within a new legal framework. The initial investment cost incurred by GTZ is now being spread over a growing number of students, lowering the unit cost of the program. The gender balance of MKI-DS had little to do with the program and more to do with the low participation of women in the labor market, but this, too, is

[2] Four Governorates have now introduced MKI-DS without German technical cooperation.
[3] Amer (2007)

improving. The MKI-DS primarily serves the modern sector, but is capable of reaching informal sector enterprises willing to train. While a number of graduates continue to higher education, a growing number are combining this with work. The displacement effect remains a potential problem, but the preference given by employers to MKI-DS students is not derived from a public subsidy, but from their productivity.

Students in focus group discussions indicated they felt MKI-DS gave them more options for employment and further education. In comparison with their friends who attended a TSS program, MKI-DS graduates estimated they earned 20% to 30% more, plus they benefited from earnings during their training. Teachers in MKI-DS schools who had experience in TSS programs concurred with these earnings estimates. When asked about benefits beyond earnings, the responses were diverse referring to the value of the training offered by factory technicians and working with up to date technology in production. The acquisition of practical skills was often cited as was learning how to handle personal relationships in the work setting. The focus group discussions revealed the MKI-DS graduates had improved their image of technical education through experience in the program.

The employment benefits for MKI-DS graduates were found to be important. The 2009 CID tracer study determined that 85% of the sample of graduates drawn from the Sixth of October Governorate near Cairo and the Sohag Governorate, a largely rural area, had been offered employment at the time of graduation. 52.8% chose to accept employment and of those employed 32.8% were working the same factory where they had taken their training. 56.8% of the CID sample were pursuing further studies with a high percentage of those doing this while working. Short courses were a popular mode of pursuing further studies. Students in the CID survey credited MKI-DS with improving their employment and career options and opening pathways to further studies to improve their well-being.

Employers, large and small, appeared enthusiastic about MKI-DS and its benefits. Their sustained financing for the program is a strong indicator of the value they attach to the program. In their focus groups employers agreed that MKI-DS provided a productive, trainable workforce. References were made to the behavioral skills that were acquired by students and to the value of engaging youths in learning about work rules, timeliness in attendance, teamwork, and responsibility. Employers highlighted as a benefit of the program the greater voice the program had given them in education policy. Previously, they had little to say about education, but MKI-DS had changed this. Credit was given to the Ministers of Education who opened the door to a dialogue between the emerging private sector and government. Just as graduates saw technical education in a new light, employers also gained new respect for the MKI-DS brand.

For schools, there were cost savings with MKI-DS as students attended school only two days per week in comparison with traditional TSS where students attended six days per week. The reduced number of days provides schools with greater flexibility to absorb additional students, or alternatively, to handle the same number of students with fewer teachers. The positive brand name of MKI-DS contributed to strong demand for places in the program with applicants estimated to be three times the spaces available. In some settings, schools benefited from employers providing additional financing for equipment. Schools also benefited in cases where teachers were given practical training in factories, although this did not happen as systematically as it might have. The close involvement of employers in setting standards for training and development of curricula helped improve the relevance of the training offered.

In their focus groups, teachers highlighted the benefits of the initial training received from GTZ and the curriculum and instructional materials provided. They referred to the smaller class size of the MKI-DS as leading to improved student discipline and students who were more motivated to learn. Teachers also referred to study tours and pay incentives provided by the Ministry of Education. They noted the higher status of MKI-DS schools and the positive effect of this on their own individual status. With the training they had initially received, the teachers felt that the program had contributed to their own career development. A number of teachers pointed out that keeping up with industry and their students created an incentive for them to stay current in their own fields of study. Teachers, like students and employers were pleased with the outcomes of MKI-DS.

Scaling-up and Strengthening MKI-DS

The working hypothesis shared in this review is that bringing schools and market work closer together improves the outcome of the school to work transition for youth. It does so by improving the relevance of what is taught and equipping students with realistic expectations about the skills and behaviors sought by employers through their work experience. The evidence drawn from this review supports the working hypothesis. Against this background, there is considerable potential for scaling up the MKI-DS. Currently, some 1,900 enterprises are participating in MKI-DS out of a potential number of 25,000 or more formal sector enterprises. It should be possible to increase the number participating to at least 50% of the total. With an enrolment of 10,200 students in 2010, MKI-DS could potentially be expanded in the next decade to over 50,000 to 60,000 students.

In the near term, the number of schools made available to MKI-DS by the Ministry of Education will act as the constraint to expansion of the program as there is now excess demand for student places from employers. In the longer run, the constraint to scaling up will be the number of enterprises willing to provide training places for students. Given the limited size of the industrial sector, it is unrealistic to expect that all TSS covering 1.8 million students can be converted to MKI-DS schools. Steps will need to be taken to address the weaknesses of the TSS programs and strengthen their link with employers. A reform program is already in place with this objective. Missing from this reform program, however, is a clear strategy for scaling up the MKI-DS. The MKI-DS fits well within the larger reform strategy for technical education, but now needs a clear vision in the form of a strategy for future development of the program.

This review has highlighted a number of areas where the MKI-DS can be strengthened starting from strengthening the financial base and improving governance. MKI-DS has mobilized new private financing for technical education, but the budget provided for the program by the Ministry of Education remains embedded within the larger budget for TSS. This makes planning for the program difficult and leaves a number of activities like teacher training, curriculum development, and school infrastructure and equipment under-funded. A separate budget from that of TSS is needed taking into account plans for scaling up of the program. On governance, the new Executive Council needs technical support to play its supervision and policy roles. The capacity of the NCHRD and the GD-VET needs to be strengthened for this purpose. Within the governance structure, information flows need to be improved vertically and horizontally for RUDS and MKI-DS schools.

Steps can be taken by the partners to enhance the quality and relevance of the training offered by MKI-DS. German technical cooperation initially helped the partners develop occupation profiles, curricula, instructional materials, and train teachers. The partners' sustaining of these activities is emerging as a problem needing attention under the Ministry of Education. MKI-DS teacher training and upgrading lacks adequate funding. Teacher focus groups criticize recent updating of the curriculum and instructional materials claiming it does not match the quality standard set by

German technical cooperation. The review encourages employers to bring teachers into factories for short-term work assignments to improve their understanding of the workplace and the technologies used. It also encourages the re-introduction of diaries kept by students recording job assignments and learning activities to be reviewed by RUDS, supervisors and teachers. Other recommendations are made to improve student assessment and establish minimum equipment standards for schools.

Added services can provide students with more information about MKI-DS as they plan for secondary education. Information about the labor market and MKI-DS can be provided through job fairs co-sponsored by NCHRD and GD-VET. Developing MKI-DS alumni networks to mentor students can improve retention and program outcomes. Representatives of RUDS need to ensure adequate time in factory visits to listen to and address student concerns about their training. The role of investors can also be expanded. Continuing their role in setting training standards is important as is the participation of employer representatives on the Executive Council. Within companies the quality of instruction varies. RUDS and the NCHRD need to help employers develop trainer profiles and provide training for those who provide practical instruction within the company.

This review faced difficulty in acquiring good quality data for program evaluation, especially on program costs as incurred by employers and the Ministry of Education. Building and strengthening a management information system for MKI-DS is needed. The new Executive Council will need this system to guide policy development. Looking forward, the review has identified a number of studies needed for evidence-based decision making. It has also recommended the strengthening of monitoring and evaluation capacity in NCHRD and GD-VET. And finally, the review has encouraged promoting knowledge sharing and public awareness of MKI-DS and its achievements. Disseminating good practices in the program among schools and teachers is important along with forums for problem solving and communication with teachers and employers. Both NCHRD and GD-VET need to be involved in these activities.

Lessons for German technical cooperation

A number of factors lie behind Egypt's ability to introduce the dual system as an instrument for smoothing the transition for youth from school to work. These start with the enabling environment that provided growth and job creation. Leadership from the top helped provide visibility and high expectations for the program. The emergence of a vibrant private sector created a clientele and a demand for the outcomes of the program. Strong leadership from within the Ministry of Education opened the way to a partnership with the private sector. The win-win nature of the program with its widespread benefits created a momentum that was difficult to reverse. And finally, German technical cooperation deserves credit for its sustained support over 14 years.

Institutional reforms and capacity building of the nature tackled by MKI-DS are unlikely to be completed in the typical 3 to 5 year project of development agencies. Development assistance and financing have to be tailored to the nature of the task. To mitigate the risk of a seemingly unending commitment, projects like MKI-DS need to be designed in tranches of 3 to 5 years duration with clear policy triggers for moving from one financing phase to another. The project needs a clear set of program objectives and an exit strategy once the objectives are achieved. Another lesson of importance is that the plan for evaluation of a program like MKI-DS does not begin once the program is completed. Good evaluation begins up front at the design stage by agreeing on a program objective and a set of performance indicators.

Where a pilot project is involved, joint learning by German technical cooperation and the partner should be the rule. Learning by doing has been the practice in MKI-DS, but this has not been backed up with a clear evaluation plan to document the lessons learned. As part of the plan, a management information system is needed for effective management of the program, but also for evaluation and learning – at the German as well as on the Egyptian side. The absence of an evaluation plan that is supported by readily accessible management information has now become a constraint to carrying out a rigorous assessment of the MKI-DS against its objectives. German technical cooperation deserves credit, however, for bringing international experience and best practices to the partner. It set out to support policy reforms rather than finance what could have been another hardware project. Its actions were taken in line with BMZ's sector concept in 1992.

German technical cooperation managed to do something that all projects would do well to emulate. It designed a program that created a win-win situation for all participants. There were few losers in this project; even TSS saw a means for improving its image. The result of this was bottom up support for the program. Had the program lost its champion at the top, there would still have been momentum from below for preserving the program. The experience of MKI-DS tells us that small investments by development agencies can pay large dividends when leveraged in a public-private partnership. In this case, German financing was probably less important than the ideas brought to the partner.

The Mubarak-Kohl Initiative Dual System in Egypt: An assessment of its impact on the school to work transition

Arvil V. Adams*

Introduction

The difficulties youths face leaving school and finding work are reflected world-wide in their relatively high unemployment rates, higher incidence of low paying or unpaid work, and the large share who are neither working nor in school. In many countries at the age of 15 when youths first legally enter the workforce, youth unemployment is at its highest levels. In the 10 years that follow, however, this rate slowly declines until at the age of 25 it approaches the rate experienced by older adults. This pattern is observed in virtually all developing and industrialized countries. The events taking place during this stage of the life cycle have been carefully studied in the search for ways to improve the pace of the youth school-to-work transition and reduce its social and economic cost for all concerned.[4]

The disproportionate burden of unemployment on youths has its origins in the mix of skills and behaviors they bring to the workforce at an early age from homes and schools, and for many, their expectations for employment. Levels of unemployment for the general population are influenced by macroeconomic policies, seasonality, and the difficulties experienced in matching job seekers and employment offers. For youths, however, the problem is often more complex and structural in nature. Youths frequently lack the technical knowledge and workplace behaviors sought by employers and are unaware of the expectations employers hold for them. Youths are also less certain about their employment options and preferences, and as a consequence, are more prone to explore different jobs leading to frequent, short spells of unemployment.

In this respect, youth unemployment is different from that experienced by adults. Where schools are not closely connected with industry, youths fail to acquire the skills sought by employers and often lack an understanding of what is expected of them in the workplace. Both problems involve information asymmetries. Schools that are not closely linked with industry frequently offer training that does not provide youths with the skills they need to qualify for employment. In turn, youths who are poorly informed about the labor market develop unrealistic wage and employment expectations. For schools, the problem may not be just about awareness of industry's needs, but financing to improve the quality and relevance of the education and training offered. These market failures exacerbate youth employment problems.

These problems are addressed by governments with policies intended to improve the pace of the youth transition from school to work. Career education and counseling in schools offer youth information on the world of work and enables youth to make better decisions about the education they acquire and how they go about the search for work. Programs like Career Academies in the U.S., Sweden's introduction of work in the secondary school curriculum, and work experience

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[4] World Bank (2007); OECD (1999); Ryan (2001)

programs in the U.K. and Australia are meant to bring schools and work closer together.[5] Labor market policies for youth minimum wages and extended probationary periods of employment lower the cost of hiring youth in relation to adults and provide youth with needed job experience and knowledge about the world of work and at the same time give employers information about the productivity of the youths they hire.

These policies address fundamental deficiencies in the preparation of youths for work and reduce information asymmetries on both sides of the labor market helping schools and students identify skills sought by employers and helping employers assess the skills of youths. The failure to take action against youth unemployment has short-term and longer-term consequences. In the short-term it can lead to lost investment in skills at a critical stage of the lifecycle and increase the risk of social unrest among youths. In the longer-term, it can extend joblessness, create a permanent underclass, and reduce the potential for national growth and development.

Some countries have been more successful than others in addressing youth unemployment and information asymmetries as reflected in youth unemployment relative to adults. Two of the more successful countries, measured by the ratio of youth to adult unemployment rates, are Germany and Japan. Lowering youth unemployment rates relative to those of adults is an indicator of a country's success in helping youth make the transition from school to work.

In Germany, the 2007 youth unemployment rate for 16 to 24 year olds was 1.3 times that of the adult rate, while in other countries youth unemployment rates were typically 2 to 5 times those of adults. In Japan, the ratio of youth to adult unemployment in 2007 was at the lower end of this range at 2.1. Other good performers included Switzerland with a ratio of 1.8, Denmark with a ratio of 1.9, and Austria and Canada with ratios of 2.1, [6]

Germany and Japan approach the school to work transition in quite different ways, but share a common feature of tightly linking schools and employers. In Germany, the dual system model combines part-time schooling with work and apprenticeship. Employers and worker organizations play an important role in implementing the model with schools. Germany shares this model with its neighbors Denmark, Switzerland, and Austria.

In Japan, the model is full-time schooling followed by full-time employment in enterprises that are closely connected with schools. Schools and their teachers act as a screening mechanism for employers to reduce the information asymmetries youths face in the labor market. The schools provide academic skills while the employer provides formal training. The screening process increases the incentive for students to do well in school and gives employers confidence in their potential workforce.[7]

Germany's dual system benefits from a unique culture of enterprise training that has a long history and set of institutions in the guilds and chambers of commerce.[8] Employers are not only willing to invest in training for specific skills sought by enterprises, but in general skills with broader applications. The unique institutional features of the system and its history are also evident in neighboring countries.

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[5] Adams (2007)
[6] UNdata (2009)
[7] Ryan (2001)
[8] Tremblay and Le Bot (2000)

Germany's efforts to transfer the principles of the dual system with its part-time education and formal apprenticeship to developing countries has proven challenging due to (i) the small share of employment in the wage sector of developing economies; (ii) the slow growth of wage employment providing places for apprentices; and most important, (iii) the weak institutions available to implement the model.[9] While the dual system appears to work well in Germany and its neighbors, the question is can it be made to work elsewhere? This review of the Mubarak-Kohl Initiative sheds light on this question.

Objectives and Approach

In 1991, Egypt began economic reforms intended to transform the economy from a state-controlled to an open market economy. Egypt's President Hosni Mubarak and German Chancellor Helmut Kohl agreed that year on a program of German technical cooperation that would help Egypt address weaknesses in its secondary technical education system and support economic reforms. A pilot program was introduced to adapt and test the principles of Germany's dual system in the Egyptian context.

The Mubarak Kohl Initiative - Dual System (MKI-DS) entered a preparatory phase the next year with a grant agreement between the German Federal Ministry for Economic Cooperation and Development (BMZ) and Egypt's Ministry of Education with technical support provided by German Technical Cooperation (GTZ). The MKI-DS pilot began in 1994 in three new rapidly growing sites: Tenth of Ramadan, Sixth of October, and Sadat City. This review follows the MKI-DS from 1994 to 2010. Its objective is to examine the impact of the program on its beneficiaries and develop lessons from the experience as a guide for Egypt's ongoing support and expansion of MKI-DS.[10]

Under the MKI-DS students were to spend two days per week in a secondary technical school, mainly acquiring knowledge of theory, while spending four days per week in a place of work developing practical skills and learning workplace behaviors. Students in a traditional technical secondary school (TSS) by comparison were to spend six days in the school for theory and practice. Perhaps first and foremost, the program was expected to improve the transition from school to work for youths, measured by placement rates.

Employers were expected to benefit from MKI-DS through improvements in the labor supply as young workers acquired skills relevant to employer needs. Schools that were part of the program could expect to benefit from a closer engagement with industry and the updating of standards and curricula that met the needs of the private sector improving the quality and relevance of the technical education offered. School benefits were also expected in the form of lower unit cost of instruction per student with reduced time in school leading to a larger number of students per school and/or higher quality of education offered. Teachers in these schools anticipated benefits in the form of smaller class sizes and upgrading of their skills for use of the new curricula and accompanying instructional materials.

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[9] Adams (2007)

[10] German technical cooperation for MKI-DS ended in 2007 when the program was fully integrated into the Egyptian vocational education system. A new program of German technical cooperation was introduced at that point seeking to build on the successes of the MKI-DS and the trust associated with the MKI name. The MKI vocational education, training and employment program (MKI-vetEP) engaged a new set of partners from the state, private economy, and civil society in addressing youth employment. This review focuses on MKI-DS and does not provide an assessment of MKI-vetEP.

Unfortunately, these and other outcomes have not been evaluated in a framework that rigorously controls for differences in the characteristics of those electing to enter MKI-DS versus a general or a traditional technical secondary education program. MKI-DS failed to adopt an experimental evaluation design allowing random assignment of participants to groups with and without the services offered by MKI-DS.

The use of a random experimental design has the advantage of controlling for bias in the characteristics of those entering alternative programs that in turn might affect the comparison of outcomes for these alternatives. For example, higher family incomes and resources in the home may influence education choices of students in alternative programs and their subsequent chances for employment. Random assignment would neutralize these family effects and permit a simple comparison of outcomes, such as earnings, among the different assigned groups with the differences attributable to the effects of the program.

As an alternative to a random experimental evaluation designs, a quasi experimental design might be used in a MKI-DS evaluation. In this case, a control group similar to that of MKI-DS participants would be identified. The group should be similar to MKI-DS participants but not receive the same services as offered to MKI-DS students. Data on individual characteristics has to be gathered on MKI-DS and non-MKI-DS students. Multivariate statistical techniques are then used to compare outcomes like employment and earnings, while holding constant the effect of other intervening variables like parent's income, place of residence, scores on preparatory exams, etc.

Selection bias, however, may still be a problem for such comparisons where unobserved differences in motivation or ability, for example, exist between the treatment and comparison groups. Those who elect to enter MKI-DS, for example, may have unobserved differences in ability from those entering other programs. Further statistical adjustments would be needed to address selection bias in the samples.[11]

This review uses a non-experimental approach to evaluate MKI-DS. It examines program outcomes for a wider set of beneficiaries than just the students themselves. As beneficiaries, the evaluation covers students, employers, schools, and teachers. Since there are no baseline surveys for the program to provide before and after measures of outcomes, the assessment represents an ex-post evaluation. The review does not systematically compare outcomes from MKI-DS with those of other programs.

The literature pertaining to MKI-DS has been reviewed and data from the 2009 tracer study of MKI-DS graduates has been analyzed.[12] In addition, interviews were conducted with a judgment sample of officials from MKI-DS schools and factories participating in the program, the General Directorate of Vocational Education and Training in the Ministry of Education, Investor Associations, Regional Units for the Dual System, and GTZ technical experts. Focus group discussions were held with MKI-DS employers, MKI-DS students and graduates, MKI-DS teachers and school officials to gather further program insights.

The questions asked fall into two categories. First, there were questions about the perceived impact of the program on each beneficiary group. The impacts examined covered labor market outcomes in employment and earnings, but extended to other outcomes considered to be benefits

[11] Heckman and Smith (1996)
[12] Grunwald and Becker (2009)

of the program for each group. The objective was to assess in qualitative and quantitative terms the benefits of MKI-DS and its costs.

Second, there were questions that pertained to the implementation of the program. These questions inquired about the design of MKI-DS and problems encountered in implementation. The questions were intended to identify features of the program that worked well, but also features that impeded effective program implementation, and if addressed, could improve program outcomes.

The review is organized in four sections. The first introduces MKI-DS, how it was implemented, and its achievements. The second summarizes the impacts of the program on beneficiaries as measured in focus group discussions. The third identifies steps that can be taken to strengthen MKI-DS if it is scaled up and the fourth summarizes lessons for German technical cooperation.

The Introduction of MKI-DS

Youth unemployment was a growing problem for Egypt in the early 1990s. The labor force was growing at a rate of about 2.8% per annum, which was not excessive by comparison with country peers, but new entrants were growing at a rate of 3% so that youths were increasing as a share of the labor force, especially in rural areas. During this era Egypt's economy was expanding, but not producing the number of jobs needed to absorb the growing labor force. Distortions in capital markets in the 1980s led to increasing capital intensity and jobless growth. Youth unemployment rates in the 1990s were 5 to 7 times those of adults in sharp contrast to those in Germany and Japan.[13]

In better times, Egypt guaranteed public employment to young graduates of technical and higher education, but by the end of the 1980s, it dropped this policy and youth unemployment began to rise. Young women were especially affected by the loss of public sector jobs as they tended to cluster in these jobs. An estimated 80% of the unemployed in Egypt were in the 15 to 24 age group. Young men in this group outnumbered young women three to one, reflecting their higher labor force participation rate. Among youths, the unemployment rate was higher among the better educated, particularly those with intermediate levels of education. [14]

Egypt launched economic reforms in the early 1990s to open the economy to further private investment and reduce the role of the state. This created a window of opportunity for change in an education system that was already subject to criticism for its failure to prepare young people with the skills needed by the economy. Using enterprise surveys, the World Bank pointed to the availability and quality of labor as a limiting factor to economic development with indications the problem was becoming worse with time.[15] Graduates of three-year industrial programs expected jobs that required skills they did not possess.[16]

As steps were being taken to open the economy and expand private investment, the education system was preparing youths mainly for employment in the public sector.[17] The shift away from state-owned enterprises and the expansion of the private sector in the 1990s produced a new

[13] UNdata (2009)
[14] Hassan and Sassanpour (2008)
[15] World Bank (2010)
[16] Gill and Heyneman (1999)
[17] World Bank (2002)

advocate for change as private employers searched for a dependable supply of skilled workers who were equipped to fill jobs in the newly emerging private sector.

Germany and Egypt agreed in 1991 to a new program of technical cooperation. Initial requests for cooperation sought German investment in workshops and equipment, but after discussions, an agreement was reached to share instead German experience with the dual system of technical vocational training. This decision was influenced by a 1991 World Bank policy paper acknowledging the weaknesses in developing countries of public technical and vocational education systems. The paper urged governments to engage in the reform of these systems to move them closer to the market and away from traditional supply-driven systems.[18]

Simply investing in education systems that were not working well or closely connected to the market promised little in the way of improvements. The World Bank paper called for an expanded role of the private sector in provision and financing of technical and vocational training with greater market accountability in public provision. Public provision of education in Egypt accounted for 90% of enrolments.[19] The agreement between Germany and Egypt with its focus on the dual system was consistent with this advice and opened the way to greater involvement of the private sector in training and the reform of Egypt's traditional technical secondary school system.

Conditions in technical secondary schools in this period helped create demand for reforms. Approximately two-thirds of secondary school students attended a technical secondary school and chose between studies in industry (49%), agriculture (12%), and commerce (39%). A subsequent review by the World Bank of Egypt's education sector cited the high cost of technical education, its low quality and relevance, and its weak payoff in the labor market.[20] Typically, the cost of technical education is higher than general education where class sizes are smaller, workshops are built and equipped with expensive equipment, and the retention of industry-qualified teachers requires higher salaries.

In Egypt, the technical secondary school systems was found to be under-funded, suffering from outdated curricula and equipment, focused mainly on educational attainment (theory) and certificates, faced with inadequate training and industrial experience for teachers, and operating in a climate of general distrust among employers of the government-led system.[21] The MKI-DS with its engagement of the private sector and promise of improvements in the quality and relevance of training provided an opportunity to test a different approach to preparing youth for employment.

The realities of technical secondary education were discouraging in their own right. However, to understand social attitudes toward technical secondary education it is necessary to understand the cultural setting that surrounded the education system. Egyptian society is segregated along class lines with small upper and middle classes and large lower and lower middle classes. Class corresponds with social status in the minds of citizens and the type of education one has is an important determinant of this status and one's potential social mobility, including who one can expect to marry.

TSS and other forms of training in this context were treated as second class options because of their weak connection with employment and earnings and their association with blue collar jobs.

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[18] World Bank (1991)
[19] Amer (2007), p.3.
[20] World Bank (2002)
[21] Grunwald and Becker (2009), OECD (2007)

General education was preferred by families because it led to higher education and perceived higher earnings, employment, and social status. These in turn influenced the marriage options available to youths, primarily young men who accounted for the largest share of TSS enrolments. The social demand for higher education was significant as a consequence. Culture was also reflected in the lower rates of women's participation in the labor force and their traditional occupational choices.

After a period of planning, the MKI-DS was launched in 1994. The Egyptian education system was then comprised of five years of primary education, later increased in 1999/2000 to six years, followed by three years of preparatory school. Based on scores on an exam at the end of preparatory schooling, students were able to progress to one of several forms of secondary education. Those with the highest scores tended to enter general secondary schools. Good performers at this level could later enter higher education. Others could enter three-year and five-year technical education schools under the Ministry of Education or programs offered by other ministries.[22]

Once introduced, the MKI-DS provided an alternative track to completing a secondary education. Students entering this track would split their time between school and work spending two days each week in classes taught by newly trained teachers using a new curriculum linked to occupational competencies developed with industry and then four days in a factory where they were to acquire work experience and practical skills.[23] After successful conclusion of the three-year program, they then received a secondary education degree from the Ministry of Education and a certificate of experience from the private sector.[24]

The MKI-DS employed the principles of the German dual system, but adapted this system to the context of Egypt.[25] Vocational training in Germany dated back to the Middle Ages and included training in craft, commercial, and technical occupations, but the modern version of the dual system dates only from the period following World War II and subsequent passage in Germany of the Vocational Training Act of 1969 and later legislation.

The German dual system is built on three principles: duality, the primacy of crafts, and consensus,[26] Duality involves the split of responsibility for training between schools and employers. The principle of primacy of crafts requires training go beyond the specific needs of a firm to the broader needs of performing a craft to produce a more flexible workforce. The principle of consensus builds on agreements between schools and firms. Only after a consensus is reached on curricula and workplace training can government ratify a program. The Federal Ministry of Education and Cultural Affairs in Germany approves degrees after reaching agreement with the social partners and consultations with industry, associations, and schools.

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[22] A five-year technical school option was created much later after 2000 offering higher level technician training in about 80 technical schools.

[23] On completion, the student received a certificate from the Ministry treated as equivalent to a technical secondary school certificate. A similar program was offered earlier by the Productivity and Vocational Training Department (PVTD) of the Ministry of Trade and Industry providing preparatory school graduates an option for training in PVTD centers with an apprenticeship in state enterprises.

[24] The concept of lifelong learning is missing in Egypt. Once an individual has entered the world of work for a period of time, he or she is not allowed to return and continue their education. As a result, students are encouraged to stay in the education system as long as possible.

[25] Grunwald and Becker (2009)

[26] Tremblay and Le Bot (2000)

These principles were built into the MKI-DS along with the introduction of new institutions in the private sector that promoted the public-private partnership (PPP) that underpinned MKI-DS. The governance structure of the program is presented in Figure 1. On the government's side, the Ministry of Education is responsible for MKI-DS through its Technical Education Department. Within this Department the MKI-DS is managed by the General Directorate of Vocational Education and Training (GD-VET).

The Ministry of Education is responsible for providing schools for MKI-DS, Depending on demand from industry, whole schools could be designated as MKI-DS schools and in other cases, MKI-DS classes could be offered in traditional TSS. The responsibilities of the Ministry of Education through its Directorate of Education and Departments of Education include provision of the curricula and teachers, training of the teachers, and preparation of labs and workshops in MKI-DS schools. In consultation with its industrial partners, it assesses student performance in mid-term and final exams and awards diplomas to those completing the program.

The private sector is led by the Investor Association Union representing independent Investor Associations located in different geographic locations. These Associations are new institutions operating under NGO law. They represent geographic clusters of businesses that function independent of the government-led federation of businesses. The National Center for Human Resources Development (NCHRD) represents the Investor Associations and functions in parallel with the GDVET. The duties of the NCHRD include coordinating the provision of training places in industry by Human Resource Development Service Centers (HRDSC) also known in some communities as Regional Units for the Dual System (RUDS). The NCHRD, working with employers, identifies trades needed by the labor market.

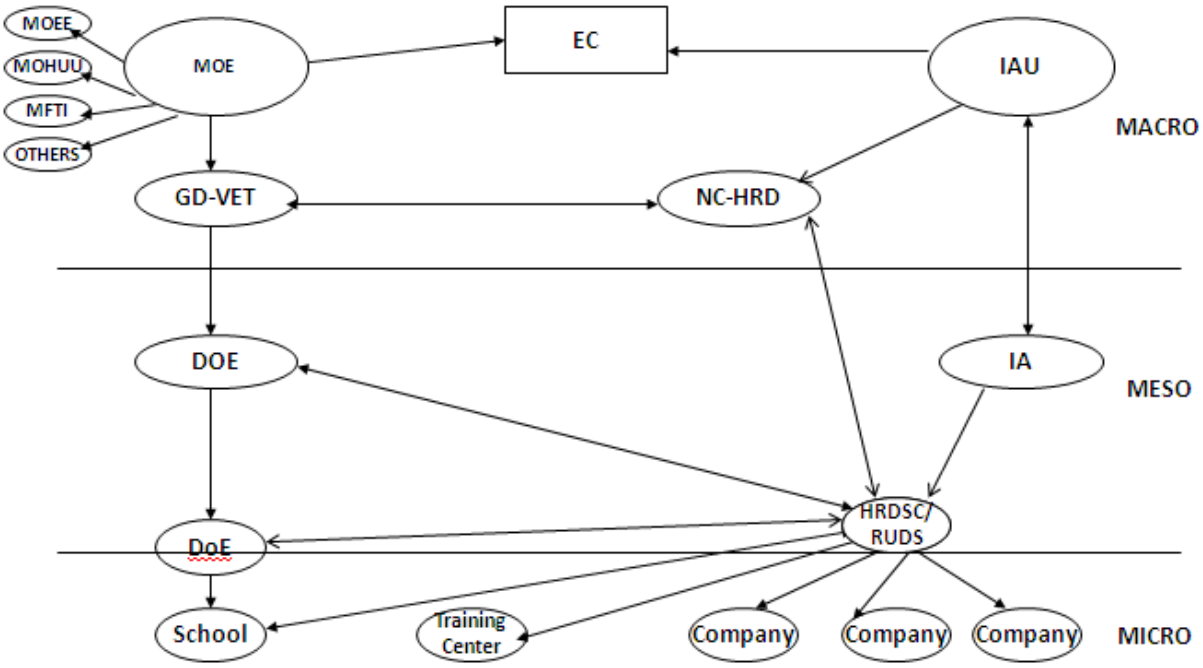
The HRDSC/RUDS are an implementing unit of regional Investor Associations and in addition to their responsibility for developing training places and preparing MKI-DS entrants, they work as partners with MKI-DS schools and classes to monitor the in-factory training experience and performance of students. The HRDSC/RUDS are self-financing as they receive payments from industry for the services they provide trainees. These were entirely new Egyptian institutions created to serve the needs of MKI-DS and have since begun to serve other programs.

The governance structure was unique to Egypt, but reflected the principles of the dual system. At the core of MKI-DS was the public private partnership that set policy, provided financing, and implemented technical education. The Ministry of Education paid the cost of schooling, including classrooms and teachers, while the private sector paid for the cost of training in factories and a stipend for trainees throughout the three-year program. The GTZ provided technical support for MKI-DS and with input from teachers and the private sector helped develop new occupational profiles that reflected the competencies needed to perform in the chosen occupations.

The governance structure for MKI-DS was amended in 2010 by Ministerial Decree No. 106. This Decree introduced an Executive Council to complete the supervision of MKI-DS. Its members included four representatives from the NCHRD and four from the Ministry of Education. The Chair of the Executive Council was to be from the private sector. The Executive Council was charged with responsibility for policy development for MKI-DS with approval of the Minister of Education, resolving implementation issues not handled at lower levels, establishing new HRDSC/RUDS as required by the labor market, and developing new curricula and trades. The NCHRD and GD-VET were the effective secretariats for the Executive Council providing it with information to carry out its functions.

Using the occupational profiles, GTZ helped develop new curricula and instructional materials matching these profiles and teachers were trained and given pedagogical and technical skills to

Figure 1
MKI Programme Structure



DOE	Directorate of Education
DoE	Department of Education
EC	Executive Council
GD-VET	General Directorate for Vocational Education and Training
HRDSC/RUDS	Human Resources Development and Services Center/Regional Unit for the Dual System
IAU	Investors' Association Union
IA	Investors' Association
MOE	Ministry Of Education
MOEE	Ministry of Electricity and Energy
MFTI	Ministry of Foreign Trade and Industry
MOHUU	Ministry of Housing. Utilities and Urban Development
NCHRD	National Center for Human Resources Development

deliver the new curriculum to MKI-DS students. The infrastructure of some model technical schools was also upgraded with private sector support. The principle of consultation was fully applied in setting standards for the program. While the Ministry of Education assessed the learning that took place in classrooms, employers and the HRDSC/RUDS monitored learning in the workplace and shared in the overall assessment of students.

When compared with TSS, the education provided by MKI-DS was different in a number of important aspects. Students in MKI-DS were taught in a different way. They acquired their academic knowledge in schools like the traditional program, but their practical knowledge was acquired in the workplace. The standards and curriculum were up to date and established through

the partnership by the Ministry of Education with input from employers. They worked with actual technology used in the workplace. What was learned was consistent with what employers were expecting students to know.

Learning objectives in MKI-DS were determined jointly by schools and employers and both were involved in assessment of the learning that took place. Through time spent in the workplace, students acquired not only technical skills, but knowledge about the labor market and the expectations of employers. The skills included knowledge of how to solve problems in production, work in teams, communicate with other workers and management, and resolve conflicts. The program, as such, addressed the information asymmetries confronted by students, schools, and employers.

German technical cooperation for MKI-DS through GTZ – on behalf of the BMZ - continued until 2007, when responsibility for the program shifted to the public-private partnership that had been formed between the Ministry of Education and Investor Associations. A legal framework was established and the program was institutionalized. The MKI-DS was no longer a development agency pilot, but a program fully owned and implemented by the Ministry of Education and its industrial partners. Law No. 62 of 2007 provided the legal framework for MKI-DS. Ministerial Decree No. 361 of 2008 provided the guidance for institutionalization of the program.

The achievements of the MKI-DS by 2010 were notable in terms of having built the platform for the program and supported its capacity building and institutionalization. German technical cooperation over the period from 1994 to 2007 totaled Euro 28.5 million. Among the program's achievements as of 2009 were the following:

- Expansion of MKI-DS from an initial 3 city sites to its coverage of 22 out of Egypt's 27 governorates;[27]
- From just a few to 76 technical secondary schools identified as MKI-DS schools;
- 1,900 companies now provide training places for students;
- 24,000 graduates with 13% women;
- 13,000 trainees enrolled with 19% women;
- 32 occupational profiles have been developed with industry input;

Estimates for 2010 are that new enrolments will climb to 10,200, a sharp increase from new enrolments in 2009 of just over 5,900. The number of companies participating and schools involved will also grow. The development cost of MKI-DS per graduate is under Euro 1,200, but this cost will continue to decline as new graduates emerge from the platform built with German technical cooperation. If all 13,000 current enrollees graduate, for example, the cost would fall to about Euro 770 per graduate and there is considerable room to scale up the program as currently there are some 1,200 technical secondary schools operating with a total enrolment of about 1.8 million students.[28]

Measuring the Impact of MKI-DS on Beneficiaries

A European Training Foundation study in 2007 called MKI-DS an "island of excellence." It based this on a survey conducted in 2002 showing that 86% of companies offered employment contracts to MKI-DS graduates. The survey found 30% of the graduates employed, 40% continuing higher

[27] Four Governorates have now introduced MKI-DS without German technical cooperation.
[28] Amer (2007)

education, and 26% searching for work.[29] This assessment, however, was not universally shared. An earlier ILO study in 2001 called MKI-DS an "innovative" program and acknowledged the potential of the program to provide modern segments of the economy with skills, but noted limitations on a national scale in reaching geographic regions and sectors that were not industrialized.[30]

The 2001 ILO study highlighted the challenge of making a public-private partnership work in a setting where history involved a state-led economy. Among the problems the ILO study referred to were the high costs of the program, its unfavorable gender balance, the potential for trainees to displace regular workers, and teachers that were not practitioners. It also took issue with the operation of the program in what it called a legal vacuum and the sizeable proportion of graduates who chose to pursue higher education rather than continue to work after graduation.

These criticisms had some basis in fact. There was indeed skepticism in the private sector of a partnership with government-led schools, but the evidence of ample numbers of private enterprises offering training places, 450 enterprises by 2000, suggested there was a willingness to test the public private partnership.[31] Strong signals from a Minister of Education in that period who supported the program and who was willing to give the private sector a voice in design and implementation of the program helped overcome some of this skepticism.

Managing expectations was a legitimate concern. As found in Germany today, the dual system serves what is mainly a modern economy and it was realistic to expect this to be the case in Egypt. Small and medium-sized firms often could not afford or did not have the expertise to provide training as part of MKI-DS. Those that would provide this training were larger, industrial firms; many located in urban areas, or newly created industrial zones in rural areas. The number of these firms would determine the potential reach of the MKI-DS and this would determine its scale and potential for reaching into all of Egypt's geographic regions and sectors. By 2007, the program had reached 22 of Egypt's 27 Governorates and had engaged 1,900 firms in training of youths.

The initial launch of the program did entail high fixed costs. It required developing 19 new occupational profiles with input from industry, the development of curricula to fit the profiles, the preparation of instructional materials, and the training of teachers. German technical cooperation provided much of this support. Building the platform was a fixed cost that could then be amortized over a stream of future program participants. The actual operating cost of the schools declined as students were in school only two days a week, allowing teachers in their six days to cover as many as three cohorts of MKI-DS students. New resources were mobilized from the private sector by MKI-DS to cover the cost of training that would have been covered by the Ministry of Education.

The program's gender imbalance was also evident at the outset, but this had little to do with the MKI-DS and was a product of the local culture that found women mainly in the home and not in the place of work. The labor force participation rate of men was three times that of women, although this ratio has been narrowing. In 2010, only 13% of the MKI-DS graduates were women, which doubtless reflected their share of employment in the traditional industrial sectors. Women were more often employed in the public sector. Although still in stereotyped roles, the ready-made garment sector, administrative assistant and medical administrative clerk occupations are opening

[29] *Ibid*. p. 17.
[30] van Eekelen, de Luca, and Ismail (2001)
[31] Amer (2007)

new jobs to women. These firms are participating in MKI-DS and the share of trainees who are women has increased to 19%.

There was a risk that students who were paid a modest stipend by employers could be used to displace more costly labor and there were reports from the tracer study of abuse with students used as low cost labor and not being provided with practical training. The displacement risk exists with any form of employment subsidy targeted to a specific group. The target group, comprised of youth around 15 years of age, may benefit from employment at the expense of those who are not part of the target group. The likelihood of young persons of this age displacing adults, however is problematic, but less problematic is the likelihood of youths of this age displacing non-MKI-DS youth from employment.

Many teachers in MKI-DS had industrial experience, but were not considered skilled practitioners. For MKI-DS this was not considered a negative because the program provided practical training in the factory using skilled workers. The lack of industrial experience was a larger issue for teachers in TSS since these teachers were responsible for providing practical training in the school. MKI-DS provided practical training in industry using the actual technology employed by the industry. At the same time, MKI-DS teachers were trained to use a new curriculum based on occupational profiles prepared in consultation with industry. The training they provided students was considered more relevant to the needs of industry.

At the time of the ILO study, the criticism of MKI-DS operating in a legal vacuum was valid, but that is no longer the case and has not been since 2007. The program is now embodied in law and has been fully institutionalized with its own governance structure. MKI-DS is no longer a program of foreign technical cooperation, but is an Egyptian-owned program. GTZ worked with the public-private partnership to prepare the first 19 occupational profiles, but since these profiles were completed, the public-private partnership has worked together to develop 13 new profiles. The legal framework and implementation arrangements provided by law and ministerial decrees have removed all signs of a legal vacuum.

The fact that 40% of MKI-DS graduates continued to higher education in 2002, rather than take jobs offered on graduation by their employer or other employers, may or may not be an issue. A growing number of Egyptian youth are electing to combine work and further schooling rather than leaving to enter higher education full-time. Further education also improves the chances for employment.[32] In Germany, six years after completion of a dual-system apprenticeship, 60.8% of program completers were employed. This percentage rises with the level of schooling certificate. A lower secondary school-leaving certificate has 55.1% employed. A general secondary school-leaving certificate has 60.9% employed and a higher education qualification has 68.2% employed.[33] Comparable indicators for Egypt are not available. A key question is whether those continuing to higher education study in the same field of their MKI-DS apprenticeship and later find employment?

The ILO criticism of MKI-DS appears to have been valid on some points, but premature on others. Today the program has been fully institutionalized. Its investment cost is spread over a growing number of students. Though perhaps expected by some, it was unlikely that the demand-driven program would serve all Egyptian youths in an economy with a small industrial sector. The gender

[32] Providing more options for part-time schooling and work and removing the restriction on working and then returning to school would likely reduce the incentive for pursuing full-time higher education after completion of MKI-DS.

[33] Tiemann, *et.al.* (2008)

imbalance for which it was criticized had little to do with the program and more to do with the nature of the labor market. The weak industrial experience of teachers was offset by having industry provide practical training using actual equipment in the workplace and the share of MKI-DS graduates continuing to higher education may finally prove to be a strength of the program in improving the transition from school to work.

The one criticism remaining is whether MKI-DS displaces others from employment. So long as the economy fails to produce the number of jobs needed to match the number of new entrants to the labor force, employment will be rationed to a subset of those entering the workforce. Targeted public subsidies to employment for some, such as a wage subsidy, can unfairly displace others from employment who are not eligible for the subsidy. In this case, however, it is difficult to see that MKI-DS graduates have been subsidized by the public sector as the private sector has absorbed a large share of their education cost when compared, for example, with graduates of TSS. The employment decision is more likely to be based on the expected productivity of the worker rather than a subsidy.

While students are a logical beneficiary of the MKI-DS, employers, schools, and teachers are also expected to benefit from the program. The benefits for each group are reported below, beginning with the benefits realized by students. By its design, this study offers a qualitative assessment of program benefits based on interviews and focus group discussions with each group. The assessment for schools comes from interviews with school officials and teachers combined. In each case, members of focus groups were asked to identify the strengths and weaknesses of MKI-DS and what they felt were the most important benefits of the program. Evidence is also drawn from tracer surveys of MKI-DS graduates by CID Consulting in 2009.[34]

Students

There were 537 MKI-DS graduates in 2008 in the target communities. CID drew a sample of 90 of these graduates to estimate program outcomes. 70% of the sample was drawn from the Sixth of October Governorate, near Cairo, and 30% from the Sohag Governorate, a largely rural area. 77.4% were male. The survey found that employment options created by the MKI-DS training were an important benefit of the program. 85% of the sample had been offered employment at the time of graduation. 52.8% chose to accept employment. Of those employed, 32.8% were working in the same factory where they had taken their training. Of the students not employed, about half were pursuing higher education full-time and the other half were neither employed nor studying.

Students in focus group discussions indicated they felt MKI-DS gave them more options for employment and further education as a result of the experience.[35] 56.2% of the CID sample were pursuing further studies with a high percentage of those doing this while working. Short courses were a popular mode of pursuing further studies among those working. More than half of those enrolled were taking courses in the same field as their MKI-DS studies. MKI-DS graduates showed a strong identify with their work. 36.9% indicated they expected to be working with the same employer or in the same field 10 years later.

When the focus group was asked about wages compared with friends who attended a technical secondary school, MKI-DS graduates reported they earned 20% to 30% more. The higher earnings

[34] CID Consulting (2007) and (2009)

[35] The Ministry of Higher Education has recently announced plans to open a track for technical education in higher education further reducing the dead-end image of secondary technical education.

were added to those received during their training. Teachers in MKI-DS schools who had taught in technical secondary schools concurred with the higher earnings estimates. These results, of course, may be biased by respondents attempting to validate their earlier decision to enter the MKI-DS program. Nevertheless, in the CID sample more than 9 out of 10 MKI-DS graduates felt their training was better than that offered by TSS because of its practical content, the relationship they had with their employer, a better curriculum, and the prestige of the MKI-DS name in the eyes of employers.

Students in the focus group were asked what benefits they received from their work in factories beyond compensation. The responses were diverse. The training offered by factory technicians was a popular feature mentioned as was working with machines in production. Working with one's hands and acquiring practical skills was frequently cited. Dealing with people and learning how to handle personal relationships in the work setting was highlighted as was learning about the labor market and the world of work.

The focus group discussion revealed that graduates had improved their image of technical education through the MKI-DS experience. The experience of work had given them a better understanding of the expectations of employers and their own capabilities. They also felt they had a better understanding of the labor market. The CID survey supported these observations. Graduates indicated that the dual workplace experience had equipped them with the confidence to make informed choices and the perceived judgment to make job search and career choices.[36] Taken together, graduates credited MKI-DS with improving their employment and career options and opening pathways to further studies to improve their well-being.

Employers

Interviews were completed with the chief executive officers of four large companies in the Cairo and Sixth of October Governorates, a focus group discussion with eight employers ranging from entrepreneurs to the Director of Human Resources for a large international hotel chain, and the head of several Investors Associations. These interviews provided a range of employer insights about the impact of MKI-DS. To a person, there was agreement MKI-DS provided a productive, trainable workforce. Some large firms saw participation as part of a social responsibility agenda. Others enterprises focused on the behavioral skills that came with work. Engaging youths when they are young to learn about work rules, timeliness in attendance and production, teamwork, and responsibility was seen as an important outcome of MKI-DS.

When asked about the impact of MKI-DS one of the areas mentioned by employers was the greater voice the program had given them in education policy. Some employers have petitioned to set up their own MKI-DS schools for their industry. Previously, they had little to say about education and students, but MKI-DS had changed this. The relationship had been further strengthened in 2010 by the creation of an Executive Council for the program that includes membership from the NCHRD and the Ministry of Education. See Figure 1. A number of employers reviewed the list of Ministers of Education over the past 16 years and the support these ministers had given to MKI-DS. Not all were said to be supportive, but the majority had been, especially the current minister and at the outset when German technical cooperation was present.

MKI-DS opened the way in the 1990s for a dialogue between an emerging private sector and government on issues of employment and skills development. This was considered an important

[36] CID Consulting (2009)

change in policy in what until then had been a state-led economy. Some described it as an entrepreneurial move by the Ministry of Education in the face of resistance from the Ministry of Trade and Industry and its Productivity and Vocational Training Department to developing a partnership with the private sector. The Ministry of Education was quick to seize the opportunity for this partnership.

The partnership opened a door of influence for employers with the Ministry of Education. The Ministry gave industry a shared role in setting skill standards leading to curricula and teacher training, and a joint responsibility for assessment of learning. New institutions were necessary to play the roles required for the private sector as a partner matching those of the chambers in Germany. From this initially came the HRDSC/RUDS and then the apex body of the NCHRD. The HRDSC/RUDS played a particularly important role helping open training places in industry and supervise students who were training in factories. These institutions were a feature that helped set MKI-DS apart from other country initiatives to introduce the dual system. The new Executive Council has given employers additional influence with the Ministry of Education.

One measure of the positive assessment of MKI-DS by employers is their willingness to pay for its services. The MKI-DS brought new private financing to technical education as employers agreed to accept trainees in the work place, provide them with practical training alongside the theoretical training they received in schools, and pay trainees a modest stipend during their three year program leading to a secondary certificate awarded by the Ministry of Education. In Governorates like Faiyum, employers contributed to the purchase of equipment for schools adding to funds provided by the Ministry of Education.

The share of MKI-DS graduates electing to pursue higher education rather than accept employment on graduation was viewed by some as a lost investment. Only a few in the focus group, however, saw this as an issue. Early efforts to change this pattern had targeted the enrolment of students from poor families for MKI-DS, shifting away from students from more privileged families likely to attend higher education. The culture and social status of higher education is so engrained in local society that employers still expect a number of MKI-DS students to pursue higher education. Several employers indicated that if they retained as many as one-third of their trainees, they considered the investment successful.

MKI-DS has attained a brand name status among employers that conveys an image of training that is closely attuned to employer needs. Just as graduates saw technical education in a new light, employers also gained new respect for the MKI-DS brand. Asked if MKI-DS had changed the image of technical education as a dead end, a number of employers answered “definitely.” When asked about the impact of MKI-DS on their firm, answers came back highlighting the good caliber of students to train, the increase in company productivity associated with students, the value of the program as an alternative to TSS, the sustainable labor supply it provided, and the positive impact MKI-DS could have in changing an organization in just a few years.

Employers both large and small appeared in their discussion to be enthusiastic about MKI-DS and its benefits. Like the case of students, this may have been due to the selectivity of firms chosen to interview and participate in the focus group, all of whom were closely engaged in the program. The responses, however, citing the sustained financing of the program by employers and the growth of firms willing to participate suggest there is real value added in the program from the perspective of employers.

Schools

Visits were made to three MKI-DS schools located in Sixth of October, Cairo, and Faiyum Governorates. These visits included focus group discussions with teachers and school directors. The enthusiasm of the teachers for MKI-DS was on display. A fourth school was visited in Heliopolis with MKI-DS classes and the Headmaster was interviewed. While many of the benefits of MKI-DS accrue directly to teachers and school directors, there are benefits that affect the entire school and are therefore covered here as separate benefits from those to be mentioned for teachers in the following section.

There are cost savings for MKI-DS schools as students attend school only two days per week in comparison with traditional TSS where students attend six days per week. The savings may be less than this since smaller class sizes in MKI-DS require additional teachers in comparison with TSS. The reduced number of days in school provides greater flexibility enabling MKI-DS schools to absorb additional students without increasing the number of teachers, or alternatively, to handle the same number of students with fewer teachers,

There are further savings associated with higher graduation rates for MKI-DS schools as completion rates for these schools are reported to be higher than those of TSS. The cost per graduate is less where completion rates are higher. These efficiency gains together with increased private investment in some MKI-DS schools open up ways to improve the quality of education offered by these schools freeing up resources for smaller classes, purchase of instructional supplies, and creating additional resources for training of teachers and enrichment of the curriculum.

MKI-DS schools as already noted have developed a positive brand name so that demand for places in these schools is high with applicants estimated to be three times the spaces available.[37] This adds to the efficiency of schools as their facilities are fully utilized. The full impact of these changes depends on how budgets are handled for MKI-DS schools. If budgets on a per capita basis are the same for MKI-DS schools as traditional technical secondary schools, the various efficiency gains will translate into additional resources for these schools to improve the quality of their instruction. However, if budgets are reduced on a per capita basis to capture the efficiency gains, then few of the benefits described above will accrue to schools.

There are other benefits that accrue to schools in locations where employers provide MKI-DS schools with additional financing for equipment. In Faiyum Governorate, for example, a per capita fee is paid by enterprises through the RUDS for each trainee to enable schools to purchase additional equipment. Schools also benefit where teachers are given practical training on equipment used in the factory, although this does not happen as often as it might as noted below. Where industry is involved in setting standards for training and development of the curriculum, the relevance of the training improves, helping improve school placement rates.

Teachers

In focus groups, teachers provided a list of benefits from MKI-DS. At the top of the list was the training GTZ had provided them when the program was first launched. They also singled out the curriculum and instructional materials provided for the first set of 19 occupational profiles developed with support of GTZ. Among other benefits teachers mentioned were the smaller class sizes in MKI-DS and the better discipline of the students. Students were seen as being more

[37] El-Meehy, *et.al.* (2010), p. 19.

motivated in MKI-DS and therefore there were fewer disciplinary cases. Teachers additionally benefited from study tours and pay incentives provided by the Ministry of Education.

Teachers also noted the higher status of MKI-DS schools and the positive effect of this on their own individual status. With the training they had initially received, they felt that the program had contributed to their own career development. A few teachers mentioned that their training enabled them to earn additional income by being selected to train others. A number also pointed out that keeping up with industry and their students created an incentive for them to stay current in their own fields of study.

While the training provided initially to teachers by German technical cooperation was considered a benefit of MKI-DS, this training was not sustained once technical cooperation ended. There is no dedicated source for teacher training in MKI-DS schools with the result that a number of teachers felt they were losing the benefits of the initial training provided by GTZ and their skills were depreciating. There were also concerns expressed about subsequent revisions of the curriculum and instructional materials made without German input. The feeling was both were being watered down and sustainability of quality was an issue.

For a few teachers who had access to factories there were added benefits from training on factory equipment and a better understanding of employer expectations for students. This benefit could be expanded if more teachers were allowed in the work place. Some NCHRD and RUDS officials and individual employers expressed resistance to this on the premise that teachers were coming to the factory to tell them how to run their factories. Employers, however, are missing the point of why teachers should be invited to the work place and how this can benefit teachers and employers by improving the relevance of what is offered in the classroom.

Actions for Scaling-up and Strengthening MKI-DS

The working hypothesis shared in this review has been that bringing schools and market work closer together improves the outcome of the school to work transition for youths. It does so by improving the relevance of what is taught and equipping students with realistic expectations about the skills and behaviors sought by employers. The German dual system provides a good example of how schools and work can be brought closer together, and while there are other ways to meet this objective, the dual system has worked well to smooth the transition from school to work in the institutional setting provided by Germany and its neighboring countries.

Adapting the dual system to the setting of other countries has proven challenging, but Egypt and the MKI-DS have shown considerable promise in this regard. The emergence of a private sector creating jobs, the expansion of demand for skilled workers, and the willingness of private employers to support a public-private partnership for skills development have collectively contributed to the success of the program. Employers have established their own institutions for management of the MKI-DS to join those of the school system. The results are Egyptian in nature, but they adhere to the principles of the dual system that split the responsibility for training between schools and employers, focus on the broader skill needs for performing a craft, and require a consensus on curricula and workplace training.

The benefits of the program go beyond students to include benefits for employers, schools, and teachers. For students, the MKI-DS has produced job offers, raised incomes, improved the image of technical education, and provided more career options, including further education. While not able to confirm these benefits in a rigorous random experimental evaluation design, the study provides

ample evidence from students themselves of the perceived benefits of the program. The program has been institutionalized and is now fully owned by Egypt's Ministry of Education and the private sector. This is a substantial achievement by German technical cooperation for its investment. There are opportunities for expansion and strengthening of the program.

Scaling-up MKI-DS

The MKI-DS is still modest in size with an admission rate in 2010 of around 10,200 students in a country with 1.8 million technical secondary students. There is considerable potential for further scaling up of the program, but also room for improving the design and its implementation. Currently, some RUDS indicate there is excess demand from employers for conversion of TSS to MKI-DS schools. Thus, in the near term the number of schools available for conversion serves as a constraint to scaling up MKI-DS. In the longer run, the constraint to scaling up is the number of enterprises willing to provide training places for students. Given the limited size of the industrial sector, it is unrealistic to expect that all TSS can be converted to MKI-DS schools. Steps, therefore, will need to be taken to improve the quality and relevance of TSS education alongside expansion of MKI-DS.

In smaller markets, rather than convert an entire school to MKI-DS a number of classrooms are set aside for MKI-DS. The Ministry of Education indicates this is not a cost-effective strategy for scaling up of MKI-DS and prefers that whole schools be converted rather than a small number of classrooms. The cost of managing a small school program is said to match that of managing an entire school. This is an empirical question, of course, that should be studied further, but for now, the Ministry of Education has expressed a preference for scaling up of MKI-DS on a school by school basis. If accepted, the consolidation of MKI-DS classrooms into schools would improve the efficiency of the program. The growth of the ready-made garment industry is the immediate source of demand for new MKI-DS schools.

Currently, some 1,900 enterprises are participating in MKI-DS out of a potential number of 25,000 or more formal sector enterprises. It should be possible to increase the number of participating enterprises to at least 50% of the total. This would represent a six-fold increase in the number of participating enterprises. With an enrolment of 10,200 students in 2010, MKI-DS could potentially be expanded in the next decade to cover 50,000 to 60,000 students. This would still represent a small share of the number of technical secondary students enrolled each year, but the number would have a significant effect on the operation of many companies and continue to raise the visibility of MKI-DS. Reaching this level will require substantial planning for schools and capacity building for RUDS.

After 14 years and evidence that MKI-DS is working well, the Ministry of Education should have a clear strategy for scaling up of the program, but this does not appear to be the case in discussions with ministry officials. Egypt in 2005 approved a strategy to develop technical education and vocational training. The strategy stresses the importance of integration and coordination of different technical education and vocational training programs through coordinating bodies, the development of labor market information systems, the building of strategic partnerships with various economic sectors and large companies, and the importance of continuing education and training. MKI-DS fits well within this set of objectives, but there is no clear vision expressed for future development of the MKI-DS program.

The European Union in 2005 provided 33 million Euros of financing for a six-year Technical and Vocational Education and Training (TVET) Reform program with another 33 million Euros co-financed by Egypt. The goal of the program is to improve the competitiveness of Egyptian enterprises in domestic and international markets by developing and implementing a national TVET reform policy. The EU TVET program shares a number of features with the MKI-DS program. Both programs work as a public-private partnership. Twelve Governorate partnerships have been signed and the EU program is working in 27 technical schools that have been upgraded by the program. The EU TVET training is done in both schools and factories covering 40 schools in all with different specializations

There are differences, however, between the two programs beginning with the governance structure. The EU TVET is working with the Ministry of Trade and Industry in partnership with the Federation of Egyptian Industries, which historically has represented state enterprises. The MKI-DS, on the other hand, is led by the Ministry of Education in partnership with Investor Associations representing parts of the private sector. The MKI-DS as a result has a stronger private sector base. Members of the Investors Associations have more control over activities, including implementation of the MKI-DS, since the leadership of these Associations is elected. The EU TVET program with the Federation is sector-based, while the MKI-DS and the Investor Associations are geographic-based from the ground up.

Another difference between the MKI-DS and EU TVET involves the financing of the two programs with implications for their sustainability. Both use government financing, but the EU TVET program in dependent on donor financing, while MKI-DS depends on private financing and is therefore self-sustaining. The EU TVET has distorted activities of the NCHRD and some RUDS by contracting with the NCHRD Director and some RUDS Directors and staff as individuals who have direct links to companies. Those contracted are said to have given priority to their new assignment at the expense of the NCHRD and RUDS activities.

The question is what will happen with the EU TVET reform program once donor financing ceases? For now, if the MKI-DS is to be scaled-up, there will need to be coordination with the TVET reform plan. The reform program and its objectives are compatible with the MKI-DS. However, a strategy and an action plan with time-bound goals will be needed to move forward with MKI-DS. The presence of the EU TVET reform program alongside the MKI-DS complicates the picture and raises the issue of what role does Egypt want the private sector to play in the TVET governance structure and financing of the reform program? That is a central question that has to be answered in moving forward.

If the MKI-DS is to be scaled up, this will require a number of technical questions be answered as part of the TVET reform strategy. The questions start with how to go about expansion of the number of employers participating and the number of training places available. Should priority be given to filling out the geographic structure of MKI-DS, should it focus on expanding employment for women, or should more attention be given to expanding along sector lines, choosing growth sectors like ready-made garments? Doing the latter within the geographic-based Investor Association framework will prove difficult. What roles should be defined for employers to play in setting skill standards, developing curricula, and providing other support to MKI-DS schools? Should MKI-DS focus on larger enterprises or also include small enterprises that are part of the informal sector?

MKI-DS appears to have worked well because the private sector has been given a shared responsibility for the program by the Ministry of Education. It is unlikely that the private sector

would continue its support without this shared responsibility. The credit for this belongs to the Ministers of Education who have supported the MKI-DS public-private partnership. The program has followed the principle of duality and the Ministry of Education has honored the principle and given the private sector a voice in education and training policies. A state-led program is unlikely to work and produce the same outcomes. To move forward with scaling up the MKI-DS will require development of a strategy for expansion that fits within a larger government reform of the TVET system with a time-bound action plan and clear set of goals. This plan should guide the external assistance of development agencies.

Strengthening the financial base

MKI-DS has performed well, but its performance can be enhanced. While the private sector is providing financing for training places, student stipends, and in some cases for school equipment, the Ministry of Education does not have a separate budget for MKI-DS. The budget instead is combined with TSS and is generally considered to be inadequate for the challenges faced. There is no clear allocation for activities like teacher training, updating of the curriculum and instructional materials, and school infrastructure and equipment. The budget for MKI-DS is provided on an ad hoc basis that makes planning for these activities difficult. New roles and responsibilities are emerging for GD VET that also need to be funded. Examples include planning and evaluation, dissemination of knowledge and experience, and the inspection of schools.

As a first step, the Ministry of Education needs to establish a budget for MKI-DS apart from that for TSS. The annual budget should be part of a three-year rolling plan prepared by the Technical Education Department covering capital and recurrent needs. The roles played by GD VET in governance, supporting the new Executive Council, and in working with the NCHRD and RUDS should be accounted for and funded in the budget. For example, there is currently no plan for tracer studies to assess program performance against objectives. Inspection is done by inspectors from technical secondary education who lack an understanding of how MKI-DS functions. Independent assessment of graduates is done by teachers from traditional secondary schools rather than by MKI-DS teachers. These functions need to be adequately budgeted and the capacity of GD-VET staff enhanced to carry out the Directorate's responsibilities.

In the course of this review, the Ministry of Education and the Technical Education Department were unable to supply detailed information on MKI-DS expenditures. Estimates could not be provided of the cost per completer of the program or the cost per completer who received a job offer, or the cost per completer who accepted a job offer. These indicators of cost-effectiveness should be standard indicators for measuring the performance of MKI-DS and comparing with alternatives like the EU TVET program or TSS. While accounting for public expenditure and its results is important, it is equally important to account for private expenditure. It was similarly not possible to secure financial information on the amount spent by employers, NCHRD, and RUDS. A public-private partnership like MKI-DS demands greater transparency and accountability for its results.

Improving governance

The governance arrangements for MKI-DS with the introduction of the new Executive Council can be strengthened. The Executive Council is charged with supervision of the MKI-DS, receiving its reports and solving implementation issues. It will study and make decisions on whether to

establish new RUDS and new trades. With the approval of the Minister of Education, the Executive Council will set policies for the program nationwide. Its decrees are to be binding after approval of the Minister of Education. Technical capacity to carry out these activities will need to be built within the Executive Council, or within the NCHRD to serve employers as members of the Executive Council and the GD VET to serve ministerial officials. This capacity does not presently exist within the Executive Council or the NCHRD and GD VET. Building this capacity and strengthening the roles played by the NCHRD and GD VET is needed.

In their capacity as members of the Executive Council, members will need technical advice on setting performance targets for the program and policies for meeting these targets. Technical expertise will be required for monitoring program budgets, preparing performance reports, and studying labor market signals of demand for new trades and RUDS. This expertise will also be needed to study implementation issues and options for problem solving and draft implementation decrees where required. None of these functions are appropriately staffed at this point or included in a budget. Building this technical expertise to serve the Executive Council will be necessary to make better policies and decisions on behalf of MKI-DS. Some basic capacity can be built within the Executive Council, but also within the NCHRD and GD TVET.

The current governance structure, as described earlier in Figure 1, is good, but it is not being used to its fullest potential. There is a potential for strengthening information flows vertically and horizontally within this structure to improve decision making and management of the program. The new Executive Council creates a need for vertical information flows on both sides of the structure and an improved horizontal exchange of implementation experience. Many implementation issues can be resolved through horizontal exchanges between employers, RUDS, and schools. Those that cannot be solved at this level can be elevated to the NCHRD and the GD VET and addressed at that level, and only issues that cannot be resolved at these levels need to be elevated to the Executive Council

There is evidence in focus group discussions that schools, RUDS, and employers are working together to implement the MKI-DS, but this relationship can be enhanced and further institutionalized by establishing forums at each level for exchanging information and views. As an example, schools and employers share responsibility for monitoring and assessment of trainees in their training. Differences have recently risen over how frequently information on job attendance should be reported to schools with employers preferring a less frequent schedule than schools. While this difference can be discussed between employers, RUDS, and schools, the solution may require a change in practice that has to be approved at a higher level in which case the issue will need to be elevated to the next level of the governance structure, the NCHRD and GD VET, and perhaps on to the Executive Council.

Information within the governance framework should flow in both directions. Just as implementation issues need to be elevated to a higher level within this structure, there are occasions where decisions and good practices will need to be pushed downward from the Executive Council to the NCHRD and GD VET, and from there to RUDS, employers, and schools. Presently, there is no indication that the governance structure is being utilized in this manner with problem solving and decisions being made at appropriate levels within the structure. The NCHRD and RUDS meet every second month to discuss problems, but there are no established forums for the GD VET and NCHRD or for schools and RUDS to review implementation experience and discuss problems or work toward solutions. At each level of the governance structure, schools and employers need to be empowered to address implementation issues and move these issues to appropriate levels for decision making.

Building capacity within the governance structure to implement MKI-DS will be important as this review found no plan in place for this. The plan starts with a review of the functions to be performed at each level of the structure as declared in various statues, decrees, and mission statements. Ministerial Decree No. 106 of May 19, 2010, for example, defines the functions of the Executive Council. Similar mission statements should be available for NCHRD and RUDS and for the GD VET. The functions performed by each body should be assigned to specific leadership and staff positions in these bodies and job descriptions developed. This should be followed by ensuring that all positions are suitably filled and a plan is in place and appropriately budgeted for improving the knowledge and skills of those holding these positions. Capacity building and strengthening has to be a continuous process.

Enhancing quality and relevance

Steps can be taken to improve further the quality and relevance of MKI-DS. The MKI-DS by providing students with opportunities to apply theoretical knowledge from the classroom in the workplace improves the quality and relevance of the training offered over that available from schools where equipment is often outdated and disconnected from that used in the workplace. Practice on actual equipment used in production and instruction from skilled workers offers more than can be provided in a simulated work setting within the school. The gains in quality and relevance of the practical training offered are expected to translate into improvements in productivity, employment, and earnings for students. The review of benefits of MKI-DS shows evidence of this, but also of opportunities to further enhance the quality and relevance of this training.

German technical cooperation initially supported development of new occupational profiles to more closely align what was taught with the knowledge required in the workplace. Textbooks and instructional materials were developed in line with these profiles. Teachers, school officials, and students acknowledge that later versions of textbooks and instructional materials do not measure up to the standards of those initially provided through German technical cooperation. While it is important to revise instructional materials periodically to stay current with changes in technology, the review heard criticism of recent revisions of textbooks contending the revisions were done more for revenue generation than for reasons to stay current with technology. The criticisms also referred to the poor quality of instructional materials as compared with those produced initially with German technical cooperation. The incentives behind and approach to textbook development for MKI-DS merit a careful review and possible reform as part of a general reform of textbook development.

The knowledge and skills of teachers influences the quality of instruction. Initially, teachers were trained with German technical cooperation to use the new curriculum emerging from the revision of occupational profiles. They were taught new technical skills alongside pedagogical skills for imparting knowledge in the classroom. Teacher forums praised the quality of instruction received at the program outset, but noted the failure to sustain the level of training for teachers in pre-service and in-service forms, particularly once German technical cooperation ended. The review found no systematic forms of MKI-DS teacher training and upgrading, which if left uncorrected will lead to deterioration in quality and relevance of the instruction offered students. One can argue that instructor training is needed for all teachers of technical education, but it should be required for MKI-DS teachers and fully budgeted.

Improving teaching quality for MKI-DS is not just the responsibility of the Ministry of Education and the Technical Education Department because teachers can also benefit from exposure to the workplace through periodic visits and work assignments. Short-term visits and placements of teachers in industry during vacation periods can acquaint them with equipment and tools used in the workplace and expectations of employers for students. Knowledge of both can improve the quality and relevance of the teaching they offer in classrooms. As already noted in the discussion of teacher benefits, the review found employers objecting to teachers in the workplace out of concern they would somehow interfere with production. The review believes this is short-sighted on the part of employers and represents a missed opportunity for improving the quality and relevance of instruction for MKI-DS.

Learning in MKI-DS takes place both in the school and in the factory. The learning that takes place in the school is shaped by the curriculum and lesson plans. The learning in the factory also needs to be part of a systematic plan with clear learning goals. Assessment of this learning in the workplace when MKI-DS began was initially tracked by using student diaries supplied by the Ministry of Education. These diaries provided daily and weekly records of job assignments and learning activities and the student's assessment of that experience. The diaries were available for review by supervisors in the workplace, by RUDS officials during regular workplace visits to monitor student performance, and by teachers in classrooms to coordinate classroom activities with those in the workplace. This practice has deteriorated over time and diaries are no longer kept systematically. Reinstituting the diary on a compulsory basis and linking it to the final exam could benefit all concerned and improve the learning experience.

By virtue of being a small program, the MKI-DS under the GD VET has depended on school inspectors and testing from traditional technical education. Testing prior to graduation is usually done by teachers from a different school to ensure the integrity of the process, but for MKI-DS this means that teachers coming to conduct tests in MKI-DS schools are often from TSS and are frequently unfamiliar with the MKI-DS curriculum and learning objectives. A solution can be found in using teachers from one MKI-DS school to conduct testing in another. There are similar problems with school inspectors unfamiliar with MKI-DS schools. Creating a cadre of MKI-DS inspectors would address this problem.

In visits to MKI-DS schools, the review found a mixture of infrastructure and equipment. Since practice is done in the workplace, the need for equipment in schools can be limited to basic equipment and tools to reinforce the knowledge of theory in the classroom. Computer labs, for example, provide basic skills in programming and use of applications for business and manufacturing. General understanding of construction trades, tool and die making, weaving and garment making, for example, may require basic equipment before entering a factory or workplace. The review found some well equipped schools and others with dated equipment. The adequacy of budgeting for equipment is a general problem for technical education in Egypt affecting not only MKI-DS schools. Employers and RUDS would do well to work with schools and establish minimum equipment standards.

Improving student services

During the review it was evident that students were interested in having more information about MKI-DS as they planned for secondary education. Preparatory school test scores were said to be the main determinant of the type of secondary school chosen, but students were interested at this critical point in having more information available highlighting the location of MKI-DS schools, the

occupational specialties available, the requirements to be met for an occupational certification, and the expected benefits of pursuing an MKI-DS secondary degree. Additional information about the labor market and the type of jobs and earnings available with different types of education was also mentioned as an area of interest by students..

Information about the labor market, but also MKI-DS, could be provided through job fairs co-sponsored by NCHRD and GD VET. Annual job fairs timed to fit into the cycle for choosing a secondary school, but also near graduation from MKI-DS can provide valuable information about careers in various industries and give students and parents an opportunity to meet employers and learn about the training and jobs offered. Students also mentioned the value of developing MKI-DS alumni networks and using these networks for mentoring students currently enrolled in the program. These networks could also be used in efforts to trace students and monitor subsequent employment experiences.

RUDS play an important role in supervising students in the workplace and helping address their problems. The 2009 tracer study referred to some students who felt abused by employers. The student focus groups highlighted examples of this. Long hours, unpleasant working conditions, menial jobs without the kind of training expected were examples. Though these cases were considered exceptions, having a means to address them is important. The review heard of cases where RUDS representative met regularly with students at their place of work, but also where representatives were unable to do this for lack of time. Listening to students and addressing their concerns is an important role for RUDS representatives to play alongside their interactions with employers and staffing of RUDS should consider this as part of the job description.

Expanding the role of investors

The RUDS in the Faiyum Governorate illustrate how investors can help address the school equipment problem by providing a per capita allowance to MKI-DS schools to finance basic equipment. As already implied, one of the important benefits of MKI-DS for schools is in the diversification of financing with contributions from the private sector. The MKI-DS training does not depend solely on public financing, nor does it place a burden on households with costly tuition, but instead, it acknowledges the benefits employers receive from the program and engages them in its financing.

There are also other ways investors can expand their role in MKI-DS. Investors are already engaged in setting standards for occupational profiles, validating curricula, delivery of training on the job, and assessment of student learning. Through RUDS and the NCHRD, employers can provide advice to the newly formed Executive Council to guide the creation of new RUDS and trades. It has been mentioned that employers could do more to improve the knowledge and skills of teachers by engaging them in visits and short-term assignments in the workplace. The MKI-DS has demonstrated the potential of the public-private partnership for schools and private sector and has created a win-win situation for both sides of the partnership.

Within companies the quality of instruction currently varies as there are no formal standards for this instruction or training for those who provide it. MKI-DS schools have taken steps to train their teachers to use the new curriculum and investors could do the same for those who provide practical instruction within the company. It would be beneficial for investors working through RUDS and the NCHRD to develop trainer profiles and provide training for those engaged in practical instruction. This would empower companies to contribute more effectively to curricula and

teaching materials and interact with teaching staff of TSS and MKI-DS schools. Such a program currently does not exist.

Promoting evidence-based policies and management

This review had considerable difficulty producing good quality data for program evaluation. Two tracer studies, one in 2007 and one in 2009, have been completed.[38] Were it not for these studies, there would be little one could use with statistical confidence to assess placement rates for MKI-DS graduates or say anything about other outcomes such as further education. As beneficial as the surveys may be, however, they do not include information on initial earnings or later earnings of graduates as most tracer studies would be expected to do. Further, no comparisons have been made with other technical education programs to assess the relative outcomes of MKI-DS.[39] The earlier discussion of random experimental evaluation designs and quasi-experimental evaluation design anticipate that such comparisons can be made, holding constant other intervening factors influencing outcomes.

Even the acquisition of administrative MKI-DS data has been difficult. It has already been noted that it was not possible to secure data on program expenditures from either GD VET or NCHRD and RUDS. To obtain these data to assess measures of cost-effectiveness or cost-benefit would require a careful audit of both government and private expenditures. The program has no management information system that produces consistent program data from governorate to governorate. Although these data may exist in the files of the program, it is evident that it is not being fully utilized for policy development or program management. Decisions are being made on partial, incomplete evidence by the Ministry of Education and the Investors Associations.

The absence of accessible administrative data and periodic evaluation surveys is a general weakness facing education and training in Egypt leaving the government unable to develop policies and manage programs based on statistically reliable evidence. Decisions are instead based on ad hoc measures and impressions. This is a weakness that needs to be remedied and not just for MKI-DS. The remedy has to start with an expressed demand for this evidence from senior levels of program management and the creation of a learning culture. The evaluation of MKI-DS, like any program, should be designed up front and not at the conclusion and it requires careful thought about performance indicators for the program, comparator groups, intervening factors influencing outcomes, methods of acquiring data, and means for analyzing data.

Looking forward, the review has identified a number of studies needed for evidence-based decision making for MKI-DS. At a minimum, management should be able to allocate budgetary resources to programs like MKI-DS based on their expected economic and social returns relative to other programs with similar objectives. This would include the use of cost-benefit and cost-effectiveness analysis. To highlight where education and training investments are needed most, labor markets need to be studied for signals of demand and supply, but also for how well these markets are functioning to allocate labor to its best uses. MKI-DS could benefit from studies monitoring quality issues like those reviewed above. For decisions about new RUDS and trades, trends in technology and employment growth by sector need to be monitored.

[38] CID Consulting (2007) and (2009)
[39] Grunwald and Becker (2009), p. 14.

The review met with evaluation specialists in GD VET and NCHRD and recommends that this capacity be further strengthened as part of developing a learning culture surrounding technical education. It should be supported with a management information system capable of monitoring administrative records and producing regular reports about performance indicators, cost of services, spatial comparators for rural and urban areas and by governorate, and gender imbalances in services and outcomes. Resources should be available for periodic rigorous program evaluations using either random experimental designs or quasi-experimental designs. While the need for evaluation of MKI-DS drives this recommendation, the recommendation is generally applicable to all education and training programs.

Promoting knowledge sharing and public awareness

The dissemination of good practices of school, employers, and RUDS by NCHRD and GD VET is important to transferring these practices and improving the general performance of MKI-DS. Efforts should be made by NCHRD and GD VET to identify good practices by each of these parties that resolve implementation issues or improve program outcomes. Employers, for example, who demonstrate success retaining graduates or who bring teachers to the factory for experience should be singled out for recognition.

RUDS that are especially effective in carrying out their supervision of students in the place of work should be recognized for their efforts and schools that open opportunities to teachers for upgrading their skills need to recognized. On an annual basis, top performing schools, employers, and RUDS in the MKI-DS program should be recognized and their practices shared with others. This currently is not done.

Creating public awareness of MKI-DS activities and their outcomes for students is another way to enhance the image of the program and technical education. As an example, data on MKI-DS achievements provided at the beginning of this review have been published on the internet, in the local press, and in other publications. News on program achievements should be disseminated regularly. Journalists should be encouraged to write about MKI-DS and its impact on the lives of students and families. Excellent examples of this are found with the MKI-DS film "Building the Future" and the accompanying brochure available in Arabic found on the web site www.egypt-at-work.org.

Public recognition of a top MKI-DS alumnus each year is encouraged along with efforts to bring these stories to the attention of the media. Monitoring and evaluation activities for MKI-DS should contribute to annual reports on the program and news about its accomplishments and challenges. These annual reports should be shared widely with journalists, policy makers and educators, parents and students, and industry officials.

Knowledge sharing should become part of the daily activities and culture of MKI-DS. The NCHRD and GD VET can create forums for problem solving and communication with teachers and employers. GD VET, for example, can sponsor periodic seminars for teachers and school administrators on problems and issues faced in technical education and invite national and international speakers to reflect on examples of how these problems have been addressed in other settings.

NCHRD may jointly sponsor these seminars, but also organize similar programs for employers and RUDS to share good experiences and resolve implementation issues. The NCHRD can hold

workshops for schools and employers on trends in technology and changes anticipated in industry affecting the demand for skills. There should be regular knowledge sharing events like these for schools, employers, and RUDS.

Lessons for German technical cooperation

This review of the MKI-DS provides an overview of the history and context surrounding MKI-DS, an assessment of the outcomes of the program from the perspective of its beneficiaries, and actions that could be taken to scale-up and strengthen the program. The MKI-DS has achieved considerable success in applying the principles of the dual system as practiced in Germany. Few countries can point to this success and it is useful to try and understand what Egypt has done to make this possible.

The MKI-DS has shown its potential to smooth the transition from school to work for youth by the high percentage of youths who receive job offers at the conclusion of their apprenticeship. From the perspective of youth and employers, the MKI-DS has improved the image of technical education. This potential is recognized in the new National Action Plan for youth employment.[40] The National Action Plan calls for a system of dual vocational education that emphasizes both theoretical and practical learning as modern apprenticeship systems do.

A number of factors lie behind Egypt's ability to introduce the dual system. Certainly the enabling environmental was important. Growth and job creation are important to any project whose purpose is to promote skills development. The question to ask in training investments is always one of "skills for what?" Egypt was experiencing industrial growth, creating jobs and demand for skilled labor. Apart from the country context, there are other factors that appear important to the achievements of MKI-DS.

The name of the program, Mubarak-Kohl, suggests leadership from the top and this, too, was important. One could argue it was not possible to let a program containing the name "Mubarak" fail in the Egyptian context, but that would be overly simplistic. Nevertheless, having a strong program champion is an important feature of any successful program.

There are other factors that affected the achievements of the MKI-DS. The emergence of a vibrant private sector as part of Egypt's economic reforms created a clientele and a demand for the outcomes of the program in terms of skilled labor. In what had been a moribund, state-led economy, this was an important development and force for change. It led to a new institution in the form of Investor Associations that was willing to put its own resources to work with those of government to address the need for skilled labor.

Surprisingly, the government itself and the Ministry of Education were factors behind the program's success. There are few examples of countries outside Germany and its neighbors where ministries of education have been willing to work so closely with industry and share decision making in setting standards for education, development of curriculum, and assessment of learning outcomes, among other factors. The ministry played a critical role in resolving an early implementation problem by providing insurance for students and placing the private sector in the driver's seat for MKI-DS. This reflected leadership within the ministry and a willingness to innovate and take risks on the part of the government.

[40] ILO and Ministry of Manpower and Migration (2009), p. 13.

Not all parts of the ministry at all times shared this enthusiasm because this review found pockets of resistance to MKI-DS. This resistance is presently reflected in the failure of the Department of Technical Education to establish an independent budget for MKI-DS. Nor does it say that all ministers of education over the 16 years of MKI-DS have provided the same level of support for the program. It does say, however, that leadership at the outset established a partnership with industry that through its initial successes created a momentum that was difficult to reverse.

A final factor adding to the success of the MKI-DS has been sustained German technical cooperation. German support for MKI-DS was critical to the program's achievements as viewed by all participants. GTZ brought necessary knowledge and experience with the dual system and from the outset demonstrated its flexibility in adapting the dual system to the Egyptian context. The key lesson here was GTZ's effort to adapt the dual system rather than transfer it to Egypt as found in Germany.

The result has been a unique program that reflects Egyptian characteristics and is Egyptian owned, but retains the principles underlying the German dual system. These principles entail the sharing of responsibility for training between schools and employers, the willingness of employers to train beyond the narrow needs of the job to achieve a more flexible workforce, and dependence on consensus among the partners in setting curricula and education standards.

The MKI-DS is not the first program in Egypt to combine school and work. An early example is found in the Ministry of Trade and Industry and its Productivity and Vocational Training Department (PVTD) where state enterprises and PVTD training centers offered programs that linked schooling with work. MKI-DS is the first program, however, to engage with a newly empowered private sector and bring with it a true public-private partnership of industry and schools.

The MKI-DS developed a brand name that is being used by the new program of German technical cooperation, MKI-vetEP, attempting to build on the success and the positive image of MKI-DS with measures to improve the employability of youths through developments in training and labor market institutions. In doing so, it takes certain risks that if not fully successful, may damage the brand name established by MKI-DS.

MKI-DS will be emulated by others and already is. The EU TVET program is an extension of the model with important differences described earlier. The key difference is the dependence of the EU TVET on donor financing, and with this, the sustainability of the program once donor financing disappears. The strength of the MKI-DS is in the self-sustaining nature of the program that combines public with private investment. By empowering the private sector as a partner, MKI-DS has been able to mobilize private investment.

The partnership is not without weaknesses. The weakness of MKI-DS rests in the limited budgetary capacity of the Ministry of Education compared, say, with the Ministry of Trade and Industry. German technical cooperation chose not to invest in infrastructure and equipment, but this left a gap in capital spending that has not been adequately filled by government or the private sector. The challenge ahead for Egypt is how it will integrate a highly fragmented system of education and training and the role the private sector will play in this system.

German technical cooperation deserves credit for sustained support of MKI-DS over 14 years, something that is unusual for development agencies where the average development project lasts 3 to 5 years. The MKI-DS has been more than a project as it has been in fact an investment in

institution and capacity building. Building new institutions like the NCHRD and RUDS and supporting a reform program for technical education can be expected to take more than a 5-year commitment and that has proven to be the case in this situation.

The lesson for German technical cooperation is that development assistance and the financing instrument used have to be tailored to the nature of the task and large reform programs with extensive institutional development are rarely going to be accomplished in 3 to 5 years. There are ways to address this problem and mitigate the risk of a seemingly unending commitment by designing programs in 3 to 5 year tranches with clear policy triggers for moving from one financing phase to another. That was a missed opportunity in the case of the financing for MKI-DS where a clear set of policy triggers to guide incremental financing and an exit strategy were missing.

The need for a clear set of program objectives and an exit strategy once the objectives are achieved is also a lesson from this experience. The MKI-DS set out to help Egypt address weaknesses in its secondary technical education system and support economic reforms. This objective could have been expressed in different forms from improving the school to work transition for youth to enhancing the quality and relevance of technical education in a sustainable manner. Each objective would have its own set of performance indicators measuring inputs, outputs, interim outcomes, and final outcomes. Monitoring performance against objectives could have made the task of exiting from the program easier by making clear when objectives were achieved.

Another lesson of importance is that the plan for evaluation of a program like MKI-DS does not begin once the program has been completed. Good evaluation begins up front at the design stage by agreeing on a clear program objective and set of performance indicators. It requires agreement at that time on how the indicators will be measured and monitored. As explained earlier, it requires agreement on the methodology for evaluation. Will a random experimental design be used in implementing the program? Will a quasi-experimental design be used, and if so, how will the treatment and control groups be formed?

Where a pilot project is involved, joint learning by German technical cooperation and the partner should be the rule. Learning by doing has been the practice in MKI-DS. As part of any evaluation program, a management information system is an important feature for effective management of the program, but also for evaluation and learning. There are lessons here for German technical cooperation since many of these features were absent at the outset of MKI-DS implementation and now become constraints at a point when there is interest in carrying out a rigorous assessment of the MKI-DS against its objectives.

German technical cooperation deserves credit for bringing international experience and best practices to the partner. Rather than agree to another hardware project for TVET that repeated the past, it drew on lessons that were available indicating that these projects were not working and that investments in policy reforms were more important. The initial GTZ manager for the project thought the project was only about hardware and was subsequently released. GTZ saw a window of opportunity for broader reforms with involvement of the private sector. This was in line with BMZ's sector concept in 1992.

Attention has focused on the dual system, but it can be asserted this was not the critical reform feature, although it was something German technical cooperation knew how to do. The principles that underpinned the dual system were the critical feature that brought together schools and employers to plan and carry out skills development. The accomplishment of German technical

cooperation was in transferring these principles in a program for which the partner was willing to take ownership. This is an important lesson for the future.

In this case, German technical cooperation managed to do something that all projects would do well to emulate. It designed a program that created a win-win situation for all participants from students to employers to schools and the Ministry of Education. There were few losers in this project; even TSS saw a means for improving its image. The result of this was bottom up support for the program. Had the program lost its champion, there would still have been momentum from below for preserving the program.

The experience of MKI-DS tells us that small investments by development agencies can pay large dividends when leveraged in public-private partnerships. German technical cooperation for MKI-DS on a per annum basis was under 2 million Euro, but by building the platform for MKI-DS, it was able to mobilize additional private spending. It further was able to promote change in the traditional school-based model for technical education and institutionalize this change. German financing was probably less important than the ideas brought to the partner.

Interviews
June 14-25, 2010

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5	Gen. Mohamed Helal	Manager	EU TVET Project
6	Mr. Fayez Nasr Mikhael	National Senior Expert Policy	EU TVET Project
7	Gen. Ali Ahmed Sayed	Education Coordinator	EU TVET Project
8	Roland Steurer	Director of the GTZ in Egypt	GTZ
9	Mr. Khalid Karara	Deputy head of Division Development Cooperation	German Embassy
10	Jan Philipp Amos	MKI-vetEP, Advisor	GTZ
11	Dr. Hani Monib	TE First Undersecretary,	MOE
12	Mr. Fadl Saber	TE Undersecretary	MOE
13	Eng. Nader Allam	Entrepreneur	6th of October Investors' Association
14	Dr. Mohamed Khamis	Entrepreneur	EL Mohandes Company, 6th of October Investors' Association
15	Eng. Fayek Mohamed	Manager	RUDS Cairo
16	Eng. Mahmoud Mohamed	Supervisor	RUDS Cairo
17	Mr. Ahmed Abd El-Hamid	Supervisor	SOC RUDS

18	Mr. Ahmed Abd El-Satar	Executive Manager	NCHRD
19	Mr. Abdel Megeed Zed	Secretary General of the NCHRD	NCHRD
20	Eng. Mahmoud Sultan.	Member	NCHRD board
21	Mr. Ali Hamza.	Member	NCHRD board
22	Mr. Abdel-Wahid El-Bahbouhy	Manager	SOC RUDS
23	Mr. Ahmed Abou ELYazid	Entrepreneur	Exhaust System company
24	Dr. Hossam Abou El-Enan	Deputy Chairman	SEDICO company
25	Ms. Laila Iskandar	Managing Director	CID - Consulting
26	Gen. Mohamed Ismail	Secretary General	Beni Suef governorate
27	Eng. Rageb Ibrahim	Manager	RUDS El Fayom
28	Mr. Ahmed Helmy	General Manager	GD-vet
29	Ms. Fayza Said Mohamed	Department manager	GD-vet
30	Mr. Amin Said	Manager	MKI SOC School 6th quarter
31	Ms. Rawia Said	Manager	MKI SOC School 11th quarter
32	Mr. Ahmed Taha Boraie	Chairman	PVTD
33	Mr. Sayed Amin	Manager	Zein El-Abdein School
34	Mr.Talal Ali Motwali	Teacher	Zein El-Abdein School
35	Mr. Emad El Dien Basiony	Teacher	Zein El-Abdein School
36	Mr. Refait Husin El Taieb	Teacher	Zein El-Abdein School

37	Ms. Samah Ali Mahmoud	Teacher	Zein El-Abdein School
38	Mr. Mostufa Mohamed	Teacher	Zein El-Abdein School
39	Mr. Kamal Ahmed Mostafa	Teacher	Zein El-Abdein School
40	Mr. Mohamed AbdeEl-Fattah	Teacher	Zein El-Abdein School
41	Mr. Adel Mohamed Gamal	Teacher	Zein El-Abdein School
42	Mr. Ahmed Abd-Aziz	Teacher	Zein El-Abdein School
43	Ms. Mona Hassan	Teacher	Zein El-Abdein School
44	Mohamed Tosson	Advisor	IP on behalf of GTZ
45	Mr. Ahmed Salem	Education Coordinator	PMU - MKI-vetEP
46	Ahmed Abd Allah	Teacher	MKI SOC School 6th quarter
47	Mr. Tarek Awad Mahmoud	Teacher	MKI SOC School 6th quarter
48	Mr. Emad Ali Ahmed	Teacher	MKI SOC School 6th quarter
49	Ms. Abeer Ismail	Teacher	MKI SOC School 6th quarter
50	Mr. Abu Bakr Ahmed	Teacher	MKI SOC School 6th quarter
51	Ms. Azza Hafez	Teacher	MKI SOC School 6th quarter
52	Mr. Mohamed Abd Allah	Teacher	MKI SOC School 11th quarter
53	Mr. Mohamed Yehia	Teacher	MKI SOC School 11th quarter
54	Mr. Ahmed Heliel	Teacher	MKI SOC School 11th quarter
55	Mr. Magdi Tawfeik	Teacher	MKI SOC School 11th quarter

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