Madagascar
Education and Training in Madagascar
Towards a Policy Agenda for Economic Growth and Poverty Reduction
Volume 1: A Summary of the Key Challenges

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Abbreviations and Acronyms

AGENATE - Agence Nationale d’Evaluation
ARIF - Association Régionale Inter-professionnelle pour le développement de la Formation professionnelle
BEPC - Brevet d’Enseignement du Premier Cycle
CEPE - Certificat d’Etudes Primaires Elémentaires
CERES - Centre de Ressources des Personnels des Etablissements d’Enseignement Technique et Professionnel
CFP - Centre de Formation Professionnelle
CiSco - Circonscription Scolaire (school district)
CNFTP - Conseil National de la Formation Technique et Professionnelle
CNTEMAD - Centre National de Télé Enseignement de Madagascar
CONFEMEN - Conférence des Ministres de l’Education des Pays ayant le français en partage
DEA - Diplôme d’Etudes Approfondies
DETP - Direction de l’Enseignement Technique et Professionnel
DEUG - Diplôme d’Enseignement Universitaire Général
DGFTP - Délégation Générale du Gouvernement à l’Enseignement Technique et à la Formation Professionnelle
DirESEB - Direction de l’Enseignement Secondaire et de l’Education de Base
ENI - Ecole Nationale d’Informatique
ENS - Ecole Normale Supérieure
ENSET - Ecole Normale Supérieure pour l’Enseignement Technique
ESP - Ecole Supérieure Polytechnique
ESSA - Ecole Supérieure des Sciences Agronomiques
FIIFP - Fonds d’Intervention à la Formation Professionnelle
FRAM - Fikambanan’ny Ray-Amandrenin’ny Mpianaatra (school-based parents association).
GIREFTP - Groupements Inter-Régionaux d’Etablissements de Formation Technique et Professionnelle
HIPC - Highly Indebted Poor Countries
IHSNM - Institut Halieutique des Sciences Marines
IOSTM - Institut d’Odontologie-Stomatologie Tropicale de Madagascar
IST - Institut Supérieur de Technologie
LTP - Lycée Technique Professionnel
MBDPA - Ministère chargé du Budget et du Développement des Provinces Autonomes
METFP - Ministère de l’Enseignement Technique et Professionnel
MinESEB - Ministère de l’Enseignement Secondaire et de l’Education de Base
MinESup - Ministère de l’Enseignement Supérieur
ONCE - Observatoire National des Compétences pour l’Emploi
ONETFOPP - Office National de l’Enseignement Technique et de la Formation Professionnelle Privé
PASEC - Programme d’Analyse des Systèmes Educatifs de la CONFEMEN
PAT - Personnel Administratif et Technique
PDES - Plan Directeur de l’Enseignement Supérieur
PDI - Plan de Développement Institutionnel
PNAE - Programme National pour l’Amélioration de l’Education
PRAGAP - Programme de Renforcement et d’Amélioration de la Gestion Administrative et Pédagogique
TEFISO - Teknica Fiofanana Socialista

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This summary is a self-contained synthesis of some key policy challenges in the three main education sub-sectors in Madagascar. It is based on the analysis documented in volume 2, the main report.
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Introduction

1. The prospects for educational development are excellent in Madagascar today in light of the increasingly favorable policy environment for the sector. During the first half of the 1990s, public spending on education relative to the GDP declined by more than 40 percent, coinciding with a five-fold rise in the country’s external debt interest payment. As the debt service burden began to ease after 1995, public spending on education began to recover, reaching in 2000 the same level of spending as at the start of the 1990s, around 3.0 percent of GDP. In the context of the government’s strategy for poverty reduction, the sector’s claim on public spending is expected to grow bigger still, rising to a projected 4.1 percent of GDP in 2003. At the same time, following the debt reduction agreement recently concluded with the International Monetary Fund and the World Bank under the Highly Indebted Poor Countries (HIPC) Initiative, an estimated savings of $50 million in interest payment are expected to materialize annually for at least the next ten years. About 25 percent of the savings is being earmarked for spending on education, further boosting public spending on education to a projected 4.3 percent of GDP in 2003, a level of spending that is comparable to the average among low-income countries benefiting from debt reduction under the HIPC Initiative.

2. Given the large investment of resources involved, the education sector is rightly expected to make a significant contribution to the government’s poverty reduction agenda. For policy makers and managers in the sector a key challenge is to identify sound directions for sector development in the medium- and long-term, and to align spending priorities and intra-sectoral policies accordingly. What then are the strategic options in this regard? Beyond fixing broad sectoral directions, policy makers also face the more immediate task of organizing and structuring the system to improve service delivery. What obstacles stand in the way of better performance, particularly in terms of educational access and outcomes among the poorest segments of the population? How can the government mount an effective policy response to overcome these constraints?

3. This note is intended as a contribution to the national dialogue on these questions. It summarizes the main findings of an education sector study that was recently completed by the World Bank in collaboration with the government of Madagascar and other partners. The results pertain only to the formal education system and are more appropriately viewed as a diagnosis of the main problems that hamper the system’s performance, than as an evaluation of its achievements. Further, to the extent that the analysis relies on data that are only as recent as the
late 1990s, the findings obviously do not take full account of the impact of the latest reforms implemented as part of PNAE2, the government’s education sector development plan launched in 1997. Nonetheless, the picture that emerges is that substantial scope remains for improvement throughout the system. Policy makers are in the enviable position of being faced with choices that can truly propel the education system’s expansion along an efficient and equitable path, thereby contributing to the country’s medium-term objective of achieving rapid economic growth and sustained reduction in poverty.

A medium-term strategy for educational development

4. An overall medium-term strategy for the sector can be articulated by considering broad efficiency and equity goals. The former refers to the consistency between the relative priority across education sub-sectors, and the country’s current economic conditions and their likely evolution in the coming years; the latter refers to disparities in the access to schooling across population groups as well as the distribution of public spending among them. The findings of the education sector study suggests that efficiency as well as equity goals in education would be served by a medium term strategy with the following orientation:

- **Universalize basic education of reasonable quality while closely linking expansion of other levels and types of education and training to labor market demand.**

5. This strategy accords well with the government’s vision for poverty reduction which relies on two broad pillars: (a) maximizing overall economic growth; and (b) ensuring inclusion of the poor in the process by enlarging their capacity both to contribute to growth and to take advantage of the opportunities to escape from poverty as the economy expands.

6. **The economic development context and efficiency concerns.** Madagascar has the typical dualistic economy that is characteristic of most low-income countries: a dominant agricultural and informal sector employing the vast majority of the workforce, and a tiny modern sector. While this dualistic structure is likely to persist for some time, the economy’s growth path will probably conform to the following common pattern: (a) a slowly growing modern sector as reflected in its share of the GDP and employment; and (b) rising labor productivity in the traditional sector which then frees up labor for work in the modern sector.

7. Investments in human capital play an important role in responding to and facilitating the foregoing processes of economic transformation, addressing skills needs in both the modern as well as traditional sectors:
*For the modern sector,* investments in technical and vocational education, and in post-secondary education are essential, but must be calibrated to the labor market's absorptive capacity. International experience shows beyond doubt that the growth and development of the modern economy depend primarily on sound macro-economic policies. Thus, even though a shortage of educated labor, whether in quantity or quality, can often constrain economic growth, a surplus would almost certainly not accelerate growth but would instead lead to unemployment and under-employment among the educated, and by implication, result in a wastage of public resources and produce frustration among those affected. To minimize these adverse outcomes, it would make sense to allow labor market signals to drive the expansion of vocational and technical education and post basic levels of education.

*For agriculture and the informal sector,* where the economic activities are highly diverse, the available evidence suggests that basic education is the most effective form of human capital investment. It improves the productivity of farmers and other workers in the traditional economy, while also contributing significantly to broader social objectives, including better health and greater social equity. For countries at Madagascar's current level of economic development, basic education yields far and away the highest economic and social returns across levels and types of education.

8. In relation to the foregoing assessment, Madagascar's current situation is highly unbalanced, as table 1 suggests. The education system produces far too many graduates at the highest levels: for example, 3,700 post-secondary graduates currently exit the system annually to compete for the 2,500 new jobs available each year requiring this level of education. At the same time, too few graduates are produced at the lower levels of the system: about two-thirds of each cohort of young people enter the workforce with either no schooling or with less than the full five years of primary schooling.

9. A strategy for education sector development must obviously take into account the current imbalance and prioritize accordingly in favor of basic education. To ensure that post-basic education develops in tandem with the labor market's absorptive capacity, it would be appropriate to create and implement selection mechanisms to regulate student flow through the system, particularly between cycles of schooling. Such mechanisms would improve on the current situation where selection occurs by default through massive dropping out within cycles of schooling throughout the system.
Table 1: Output of graduates and their absorption on the labor market, Madagascar circa 1999

<table>
<thead>
<tr>
<th>Educational attainment</th>
<th>Number in each cohort ('000)</th>
<th>Sector/type of employment</th>
<th>Number of jobs ('000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td>Agriculture</td>
<td>98.5</td>
</tr>
<tr>
<td>Primary schooling</td>
<td></td>
<td>Informal sector</td>
<td>?</td>
</tr>
<tr>
<td>No schooling</td>
<td>57</td>
<td>Small firms</td>
<td>?</td>
</tr>
<tr>
<td>Incomplete primary</td>
<td>138</td>
<td>Large firms &amp; the civil service: Lower level jobs</td>
<td>18</td>
</tr>
<tr>
<td>Complete without CEPE</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete with CEPE</td>
<td>31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incomplete lower sec.</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete without BEPC</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete with BEPC</td>
<td>2.5</td>
<td>Large firms &amp; the civil service: Higher level jobs</td>
<td>6.5 - 6.0</td>
</tr>
<tr>
<td>Incomplete upper sec.</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baccalauréa</td>
<td>7.3</td>
<td>Top-level jobs</td>
<td>2.0 - 2.5</td>
</tr>
<tr>
<td>Higher</td>
<td>3.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cohort size</td>
<td>300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Equity concerns. The performance of the education system in this regard also leaves much to be desired at present. The share of public spending on education benefiting children from the richest 20 percent of Malagasy households is five times the share that benefits children from the poorest 20 percent. Among twelve other developing countries for which similar data are available, only Guinea has a higher ratio; and among the remaining countries, the corresponding ratio ranges between 1.2 and 2.8. From a longitudinal perspective, the current structure of the education system is such that the best educated 10 percent in any birth cohort claim an estimated 64 percent of the public spending on education accumulated by the cohort as it passes through the education system. Again, the result is much more inequitable in Madagascar than elsewhere in the world. For low-income countries in Latin America, the Middle East and Asia, the corresponding share is, on average, less than half as high. Simulations
show that the picture in Madagascar can be improved dramatically by focussing on improving basic education, particularly survival rates at the primary level.

11. To summarize, the results of the education sector study strongly suggests that a sector development strategy that extends basic education of adequate quality to all children, while calibrating the expansion of the other levels to the rhythm of economic activity and trends in the demand for qualified labor, would be both efficient and equitable. In the sections below, this paper summarizes what such a strategy might imply in terms of policy challenges in each of the education sub-sectors.

**Primary education**

12. At the 2000 Dakar Education For All Forum, basic education was defined as including the primary cycle as well as the first cycle of secondary schooling. In Madagascar’s current context, the primary cycle continues to warrant top priority, however, not least because the system’s performance at this level remains very weak. Survival rates are low, particularly among children from poor families, while grade repetition occurs much too frequently and student learning remains highly inadequate. Many of these problems reflect weak management of the allocation of teachers across schools, poor organization of time use, and ineffective oversight of the pedagogical process in schools and classrooms. Based on the results of the sector study, the key policy challenges in primary education would appear to be the following:

- **Improve survival rates to the end of the primary cycle and reduce grade repetition;**

- **Rationalize teacher allocation across schools and improve the efficiency of time utilization by teachers; and**

- **Enhance student learning by ensuring adequate provision of teaching materials, but especially by improving management of the pedagogical process in schools and classrooms.**
13. **Low survival rates to the end of the primary cycle** Figure 1 offers a graphic illustration of the problem. While the share children who enter first grade is respectably high at 81 percent, only 33 percent of the entrants reach the end of the cycle, implying that only 27 percent of the children in each birth cohort attain the full five years of primary schooling. This poor outcome is clearly undesirable, given that children generally require at least 4 years of schooling of reasonable quality to become permanently literate and numerate as adults, skills that will enhance their economic productivity as well as their chances of escaping from poverty.

14. **Large disparities in survival patterns across population groups.** To Madagascar’s credit, differences in schooling outcomes between boys and girls are limited, unlike the situation in many low-income countries, and disparities across provinces are also not as large as those observed in elsewhere. Even so, the lagging performance in two of the provinces is noteworthy: in Toliara, the rate of entry to grade 1 reaches only 58 percent, while in Toliara and Fianarantsoa the survival rate to the last grade in the primary cycle reaches only 22 and 23 percent respectively (table 2). As a result, the full cycle of primary schooling is attained by only 13 and 17 percent, respectively, of each cohort of children in the two provinces.

15. In Madagascar, the most striking disparities are between urban and rural areas and across income groups. Whereas 60 percent of urban children achieve a complete primary education, the corresponding share is only 12 percent among rural children. The gap by income
group is even wider, with 70 percent of the children from the richest 20 percent of families attaining a complete primary education, compared with only 6 percent among children from the poorest 40 percent of the families. Differences in entry rates are part of the reason for this outcome: while nearly all the children from the richest families enter grade 1, only two-thirds do so among those from the bottom 40 percent. An even more important reason is the disparities in survival rates: 70 percent among children from the richest families, compared with only 9 percent among children from the bottom 40 percent. These results suggest that the country's poverty reduction strategy would be meaningful only if substantial efforts for improvement are directed at children from poor families, especially those in rural areas.

16. **High rates of grade repetition.** In addition to the problem of low survival rates, the Malagasy education system also suffers from one of the highest rates of grade repetition in the world, averaging about 31 percent for the system as a whole. Such a high rate is wasteful not only because repeaters take longer to complete their studies and therefore cost more to educate, but also because the available research evidence suggests that grade repetition hardly improves student learning and tends to encourage dropping out. The combined effect of low survival and high repetition rates is to make the Malagasy system one of the least efficient in the world in terms of student flow, with an index of student flow efficiency that is less than one-third as high as that in a system with no grade repetition and no dropping out (figure 2).

17. **Policies to improve the pattern of student flow.** In Madagascar, such policies would need to focus simultaneously on improving survival rates and lowering the incidence of grade repetition, using interventions that address constraints on the supply of services as well as the demand for them. Supply-side constraints are more feasible to change, particularly in the short-run, but some options also exist to ease demand-side constraints. The government's current efforts to encourage greater participation by parents and other community members in school activities through the "contrat programme" arrangement is a step in the right direction. Allowing greater flexibility for local authorities to adapt the school calendar and daily schedule to local conditions would, by minimizing the opportunity cost of schooling, further lower the demand-side constraints on schooling.
18. With regard to obstacles on the supply-side, the sector study estimates that about 19 percent of the children who start first grade attend a school that offers fewer than the five grades of instruction in the primary cycle. Making it possible for all schools to offer the full cycle—by removing constraints in staffing or facilities—would ensure that no child who wished to continue to the end of the cycle would be “pushed out” of the system. The study also identified the limited instructional time that children receive as another important supply-side constraint. There is much room for improvement in this regard, given that currently only 43 percent of all public primary schools in the country offer their pupils a full-day’s instruction (i.e. between six to eight hours daily), with the remaining schools offering no more than four hours and some even offering only two hours. Because instructional time is the single most important influence on children’s progress in learning, the short instructional day for the majority of Malagasy children is a key factor behind the country’s high drop out and repetition rates. Addressing these supply-side constraints would require concerted and sustained efforts to rationalize the deployment of teachers across schools and to enhance the efficiency of time utilization by teachers.

19. A more rational deployment of teachers across schools. Teachers represent the bulk of the resources that schools, particularly at the lower levels, receive to organize the delivery of education services. The distribution across schools therefore deserves close attention as a key management issue. In a well-managed system, one would expect that the more pupils a school enrolls, the more teachers it would receive; similarly one would expect that schools of comparable size would have more or less the same number of teachers.

20. In Madagascar, however, the current pattern of teacher allocation across schools departs substantially from this objective standard, even if, on average, a positive relation exists between the number of pupils and the number of teachers (see figure 3 where each circle represents a school). For example, among schools with 150 pupils the number of teachers could range as widely as between one and seven; and among schools with four teachers, the number of pupils enrolled could lie anywhere between 50 and 500. A closer look at the problem suggests that the inconsistencies in
teacher allocation affect rural schools more adversely than those in urban areas. Schools in the city of Antananarivo are particularly favored in this regard, while those in Antsiranana and Toamasina are generally less well-endowed relative to schools in other provinces. Yet the bulk of the global pattern of inconsistency in teacher allocation arises from the poor distribution of teachers across schools within each province, rather than from differences across provinces per se.

21. The freeze on teacher recruitment during the 1990s did little to ease the situation. For the system of public primary schools as a whole, the pupil-teacher ratio rose from less than 40:1, on average, at the beginning of the decade, to about 53:1 at present, implying that schools were generally becoming increasingly under-staffed over the decade. However, the large inconsistencies in teacher allocation across schools exacerbated what was already a difficult situation, so that across the system today some schools enjoy a relatively favorable allocation relative to their student population while many others experience severe shortages that seriously compromise their capacity for effective service delivery. With the lifting of the hiring freeze since 1997-98 the situation has improved somewhat. The significant increases in recruitment currently underway—about 3,500 new positions in 2001 (representing a 10 percent increase) and more planned for future years—provide a golden opportunity to make further gains in this regard. Turning the potential for improvement into reality would require two key ingredients, however: (a) defining and applying precise and transparent criteria for teacher allocation centered on enrollments and possibly other relevant factors; and (b) making systematic efforts, including the use of appropriate financial incentives for posting to rural schools and other difficult-to-reach areas, to ensure that new teacher recruits are allocated to the under-endowed schools.

22. **Better time utilization and arrangements for multi-grade teaching.** Besides the poor allocation of teachers across schools, the system also suffers from a sub-optimal utilization of teachers’ and pupils’ time, a problem that arises mainly from inadequate arrangements for multi-grade teaching. The geographic spread of the population in Madagascar is such that many public schools serve relatively few pupils, with nearly half them enrolling fewer than 100 pupils each. In

<table>
<thead>
<tr>
<th>Table 3: Incomplete schools, multi-grade teaching and time utilization in public and private schools, 1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>First graders in a school with less than 5 grades (%)</td>
</tr>
<tr>
<td>Schools offering multi-grade instruction (%)</td>
</tr>
<tr>
<td>All schools</td>
</tr>
<tr>
<td>Schools with less than 75 pupils a</td>
</tr>
<tr>
<td>Schools with multigrade classes according to instructional time (%)</td>
</tr>
<tr>
<td>Full day</td>
</tr>
<tr>
<td>Half-day</td>
</tr>
<tr>
<td>Less than half-day</td>
</tr>
</tbody>
</table>

a: Such schools make up 31.5 percent of all schools.
such schools, the use of multi-grade teaching—whereby one teacher takes charge of pupils from several grades—is appropriate both to manage costs and to ensure effective teaching. On average, about 62 percent of the country’s public primary schools do indeed organize their classes for multi-grade teaching; and the share rises to 70 percent among schools with fewer than 75 pupils.

23. Yet most of the schools implement multi-grade teaching in a highly ineffective manner. Instead of having all the children in the same classroom grouped by grade level for a combination of instruction and independent work over the course of the entire day (as is the practice in almost all other countries), teachers in Madagascar tend to organize their pupils for instruction one group at a time in the classroom. More than half of the public schools using multi-grade teaching offer their pupils less than a full-day’s instruction (table 3). Given that instructional time, including time that pupils spend on independent work in the classroom, is the single most important factor affecting student learning, it is indeed a matter of urgency to change the current arrangements for multi-grade teaching so as to ensure that all schools offer their pupils full-day instruction. The fact that many other developing countries, including those at Madagascar’s level of development (e.g. Burkina Faso) have successfully implemented multi-grade teaching with good results, suggests that the change is as desirable as it is feasible.

24. Weak link between funding and student learning. That inadequate funding constrains educational quality is a widely-held belief. There is of course some validity to this view, since schools cannot be expected to offer adequate services in the absence of a minimum package of schooling inputs. For policy purposes, however, it is important to see funding for education as a means toward producing student learning, rather than as an end in itself. In other words, the focus should be on the process of transforming the available resources into student learning. How well do schools in Madagascar perform in this regard?

25. Figure 4 shows some pertinent results based on a sample of 70 public primary schools surveyed in 1999 in the PASEC study sponsored by CONFEMEN. Each circle in the figure represents a sample school whose position is determined by its level of public spending per pupil (x-axis) and the average test score of its pupils in French and mathematics (y-axis), after controlling for the pupils’ level of learning at the start of the school year and their socio-economic composition. The results show that while spending per pupil
does correlate positively with learning outcomes, the relationship is very weak. Thus, schools with comparable levels of spending per pupil produce widely different levels of student learning, and schools that achieve similar levels of student learning do so with very different levels of funding. The same weak relation between spending and learning obtains when the analysis is repeated using data for all public primary schools in the system, with learning measured by pass rates on the CEPE examination at the end of fifth grade.

26. The lack of a strong relation between funding and learning outcomes across schools suggests that schools probably differ widely in how they are run, for example, in terms of how teachers use their instructional time and manage their classes and how their supervisors guide, monitor and evaluate their work. These pedagogical processes work more effectively in some schools than in others, and the result is reflected in the gaps in learning outcomes even across comparably-funded schools that serve similar clienteles. That the disparities are large is symptomatic of a system with weak management and oversight of the process of teaching and learning in schools. These results imply that while lack of funding may constrain performance in some schools, particularly those where minimum conditions for learning are not met, an infusion of additional spending would make sense only if accompanied by concurrent measures to improve the management of pedagogical processes operating at the level of schools and classrooms.

Secondary education

27. Over the course of the 1990s, enrollments in lower secondary education rose only modestly while those in upper secondary education declined. At the same time, the distribution of enrollments shifted in favor of the private sector, with the number of students in the public system shrinking by 12 percent between 1990 and 1998 in the first cycle, and by 26 percent in the second cycle. By the end of the decade, private schools accounted for 45 and 49 percent, respectively, of total enrollments in lower and upper secondary education. The sector study identified two issues which appear particularly relevant to the future development of secondary education: (a) how to manage its expansion as a part of the broader strategy for development of the whole system; and (b) how to rationalize service delivery in a system that will continue to include many small schools. As a direct service provider, the government faces the following key challenges:

- **Expand lower secondary enrollments at a moderate pace, while in the upper secondary cycle, focus more on quality improvements than on expansion; and**

- **Take advantage of scale economies and increase the practice of multi-subject teaching to manage the high unit costs of service delivery.**
28. **The balance between the lower and upper secondary cycles.** The medium-term direction for secondary education development is less clear-cut than it is for either primary education or for vocational/technical education and post-secondary education. The problem becomes clearer, however, when the two cycles of secondary schooling are put in perspective. In most developing countries, lower secondary education is increasingly and rightly viewed as a natural continuation of primary schooling, and therefore a part of the basic education to which *all* children need access in order to acquire the skills to function productively as adults. In contrast, upper secondary education is more appropriately viewed as a prelude to higher education, implying that its expansion should be driven by the same consideration of labor market absorption as for higher education itself.

29. Given the current and projected labor market conditions in Madagascar, it would appear prudent to keep enrollments in *upper secondary education*, particularly in the public sector, under somewhat firm control, with student selection based on merit and academic potential. At the same time, the restraint in terms of quantitative expansion could be matched with greater support for quality enhancements—through, for example, spending on pedagogical materials, libraries, laboratories, computers, and so on—geared toward producing graduates equipped with the skills to fill jobs in the modern economy. Because upper secondary education, like higher education, is largely a private good; its expansion through Madagascar’s mostly self-financing private sector would make sense as a way to satisfy excess demand without overburdening the state. To address equity concerns, however, the sector development strategy for secondary education could include provisions for financial support to bright students from poor families, whether in the form of scholarships to attend private schools, or bursaries to defray personal schooling costs in the public sector.

30. With regard to *lower secondary education*, it would be wise to proceed slowly, even if the intention is eventually to universalize this cycle of schooling as an integral part of basic education. The speed of expansion will, in any event, be constrained by the fact that currently only 33 percent of the country’s first grade entrants reach the end of the primary cycle and that among the completers, 65 percent are already making the transition to lower secondary school. Furthermore, given that public resources for education will remain limited even after allowing for a reorientation of government spending in favor of the sector consistent with the country’s poverty reduction efforts, overly rapid expansion of lower secondary education will mean adverse tradeoffs against the demonstrably higher priority of investing to improve primary education. Here again, the government could adopt a two-pronged strategy. One prong would be geared toward supporting service delivery through the private sector under various arrangements for student finance, including subsidies to private schools under contractual arrangements for incremental expansion of enrollments, direct subsidies to deserving students from poor families to defray the cost of schooling whether they are enrolled in a public or private
school, and so on. The other prong of the strategy would involve selective expansion of the public system to serve populations in difficult-to-reach localities where the private sector is unlikely to provide services.

31. **Economies of scale in service delivery and cost management in small schools.** In both lower and upper secondary education, most schools in the system enroll relatively few students. On average, about 60 percent of the public lower secondary schools have fewer than 125 students (figure 5); the corresponding share among upper secondary schools is 47 percent. Given that unit costs decline sharply with enrollments, the predominance of small schools implies that the public system is relatively expensive as a whole. Figure 5 shows that unit costs average about FMG 300,000 per student in lower secondary schools with more than 400 students, compared with about FMG 600,000 in schools with 75 or fewer students. In upper secondary education, the unit cost differences are equally wide between large and small schools. In view of the strong economies of scale, it would be wise to minimize creating new schools for small catchment areas, and to consolidate existing small schools where feasible, combining the effort as needed with appropriate measures to minimize possible adverse effects on deserving students from poor families.

32. Given the sparse population density of the country, small schools may nonetheless be the only way to ensure that services are accessible in some localities. Yet even if one accepts this argument unreservedly, ways can still be found to contain the high unit costs of small schools, particularly by improving the efficiency of time use by teachers. The difference between public and private schools in this regard is particularly notable: while the size distribution of enrollments is comparable across the two sectors, teaching loads are significantly lighter for teachers in public schools: in the lower secondary cycle they average 15 hours weekly compared with 19 hours for teachers in private schools; while in the upper secondary cycle, the corresponding loads are 18 and 12 hours weekly (table 4).
difference between the two sectors reflects the combined advantage of two arrangements in the private sector: (a) more of their teachers teach more than one subject; and (b) more of the schools combine lower and upper secondary education under one roof, making it possible to make fuller use of the specialist teachers on staff. Given that neither of these arrangements has compromised schooling outcomes, particularly student learning, it would seem reasonable to consider adapting these promising arrangements to contain the high cost of the public system.

**Vocational and technical education and training**

33. Major reforms, mostly relating to the overall management structure of the system, have been implemented recently, but more remains to be done to improve service delivery and its responsiveness to the demand for skilled labor. The sector study identifies the following as a key challenge in managing the public training system:

- Rationalize the supply of training services so as to reduce their high unit costs and align them more closely to labor market needs.

34. The need for training. Vocational and technical training occupies a relatively modest place in Madagascar’s education system at present, accounting for less than 6 percent of the students enrolled at the secondary level. Given the macroeconomic context, its share of enrollments is likely to remain modest over the medium term. The training system can nonetheless contribute to addressing the growing skills deficit among young workers, a problem that has emerged and will persist as a legacy of the weak performance of primary education over the years (figure 6). Given the diversity of training needs in this population, it would make sense to rely on flexible training arrangements, including competitive funding of public as well as private providers combined with transparent criteria and mechanisms to assess funding eligibility. At the same time, as flexibility is expanded, periodic evaluation of results and other appropriate measures to encourage accountability would be needed to ensure that funds are indeed directed toward the desired outcomes.
35. **The weak demand for public sector training and the system’s mediocre internal efficiency.** Despite the skills deficits implied by the foregoing profile of the workforce, public training institutions attract a weak demand. New entrants to the centres formation professionnel (CFPs)—institutions that offer lower level vocational training—have been falling for several years now, and the current annual intake hardly exceeds 500 new students; moreover, half of the entrants drop out of their courses by the end of the first year (table 5). The demand for places in the lycées technique et professionnel (LTPs)—institutions offering vocational training at the upper secondary level—is stronger, with about 15 percent of the BEPC-holders or around 2,700 students annually choosing this option after completing of their lower secondary education. However, fewer than 40 percent of the LTP students obtain the formal Baccalauréat certification at the end of the course. Even so, the labor market is currently unable to absorb the small number of successful graduates, except for those enrolled in service sector programs. About 85 percent of the latter exit the education system altogether after obtaining their Baccalauréat, presumably to join the workforce, but among those graduating from the industrial sector programs, 70 percent go on to higher education where most pursue programs totally unrelated to their specialization in the LTPs.

36. **An overly fragmented “map” of training institutions.** Relative to the demand, there is an over-supply of public institutions offering technical and vocational education. As a result, most of the institutions serve too few students to be able to deliver their services at a reasonable cost. The average CFP enrolls fewer than 50 students and operates at only 60 percent of full capacity (table 6). The occupancy rate in the LTPs is generally higher, but their enrollments remain on the low side, with nearly half of the institutions serving fewer than 150 students each. Besides being fragmented, the supply of services, particularly in the CFPs, is also poorly diversified: 75 percent of the CFPs offer courses in only one or two specialties, while 50 percent of the LTPs offer fewer than four specialties. Moreover, none of the institutions appears to have a comparative advantage in any particular specialty. The lack of specialization and diversification across institutions is inevitably costly and inefficient: it results in duplication of course offerings in multiple locations each enrolling very few students, and in the absence of courses, such as agriculture in the CFPs, that might be more relevant to the needs of Madagascar’s predominantly agricultural economy.

| Table 5: Students in public vocational and technical education, 1998-99 |
|-----------------|-----|-----|
| Public sector share of enrollments (%) | 25  | 51  |
| Entry rate (%) | 0.6 | 14.6|
| Number of new entrants | 503 | 2,678|
| Total number of students | 1,674 | 8,477|
| Dropout rate at the end of the 1st year (%) | 52  | 4   |
| Survival rate to the end of the cycle (%) | 39  | 35  |
| Transition rate to higher education (%) | -   | 30  |

* New entrants as a percentage of holders of pre-requisite qualification.
37. Because the system is overly fragmented and individual institutions are under-utilized due to weak demand, operating costs are high everywhere, and exorbitantly so in the CFPs. The cost per student in the latter institutions is on the order of FMG 2,000,000, about five times the unit cost of lower secondary education. Cross-country data suggest that vocational and technical education is twice as costly in Madagascar as in other low-income countries, the unfavorable comparison reflecting an excess of administrative and technical support personnel who clearly are not central to service delivery. Absent a deep restructuring of the network of institutions offering vocational and technical training (particularly the CFPs), it would be difficult to reduce the high unit costs of the system. Such a restructuring could perhaps be centered around a few promising institutions, especially some of the LTPs. The consolidation would help to reduce costs and allow for greater specialization across institutions, while also facilitating greater diversification in course offerings.

38. A top-heavy and hence costly structure for system management. Aside from the high administrative costs at the level of individual institutions, such costs are also high for the system as a whole. Administrative personnel at the central and regional levels absorbs nearly one third of the total public budget for vocational and technical education; and the cost of these administrative expenses averages around FMG 550,000 per student, which is about ten times the corresponding cost in primary education, and three times that in general secondary education and in higher education. Administrative costs at the level of

| Table 6: Supply characteristics of public vocational and technical education, 1999 |
|---------------------------------|-------|-------|
| No. of schools                  | CFP   | LTP   |
| Average no. of students per school | 49    | 326   |
| No. of school by size of enrollments |
| Less than 25 students           | 12    | -     |
| 25 to 49                        | 10    | 1     |
| 50 to 99                        | 9     | 6     |
| 100 to 149                      | -     | 5     |
| 150 or more                     | 3     | 14    |
| % of capacity utilized (%)      | 56    | 80    |
| No. of school by no. of programs offered |
| 1                               | 10    | 1     |
| 2                               | 15    | 5     |
| 3                               | 7     | 8     |
| 4 or more                       | 2     | 12    |
| Index of specialization a       | 17    | 11    |
| Student to staff ratios         |       |       |
| Teaching staff                  | 5     | 10    |
| Non-teaching staff              | 8     | 14    |
| Unit cost (in millions of FMG)  | 1.9   | 1.0   |

*: Average of the indices of individual schools; the index ranges from 0, denoting an unspecialized school, to 100, denoting a school that is highly specialized.

Figure 7: Administrative expenses as a share of total current spending, 1998
the institutions themselves are also high, accounting for more than 20 percent of the public spending on vocational and technical education. In total, administrative expenses at all levels absorb nearly 50 percent of the sector’s budget, far more than in the other sub-sectors (figure 7).

**Higher education**

39. Significant reforms were implemented during the 1990s in this sub-sector. They led to a profound shift in the distribution of public spending on education, with the share of higher education falling from 32 percent at the start of the decade, to around 13 percent by 2000. As a result of the reforms, the institutional composition of the sub-sector has been diversified—a major benefit in and of itself—and the overall size of enrollments in higher education and public spending on student welfare have been brought under control. These gains notwithstanding, further reforms are needed to improve the internal as well as external efficiency of the system. As a direct service provider, the government faces the following key challenges:

- **Rationalize the system’s structure to improve the quality of services as well as its responsiveness to the demand for skills on the labor market;** and

- **Improve personnel management, particularly the system for compensating overtime teaching, and the use of administrative and technical staff (PATs).**

40. The system’s lagging internal and external efficiency. Of the 30,000 students in higher education, 58 percent are enrolled in the public universities, 11 percent are in the specialized schools and institutes attached to the universities, 24 percent are in distance education, and the remaining 7 percent are in private institutions. In the public sector, a system of pre-selection for entry into almost all programs was put in place at the start of the 1990s, contributing to the substantial improvement in the internal operations of the system. Despite these gains, however, repetition and dropout rates remain high in certain institutions. In the university faculties, more than a third of the students in a class are repeaters, and barely 30 percent of the entrants, on average, reach the end of the second cycle (i.e. fourth year of their studies; see table 7). The performance of distance education is particularly weak, with nearly 80 percent of the
students dropping out after only the first year of study, and fewer than 5 percent surviving long enough to obtain their diplomas.

41. The public sector currently produces around 3,700 graduates a year, far too many relative to the labor market’s absorptive capacity of at most between 2,000 and 2,500 new workers annually with university-level training. As there are no obvious signs that the pace of job creation would pick up significantly in the coming years, it would be prudent to manage the expansion of higher education closely while allowing labor market needs to dictate the composition of enrollments. To the extent that the internal efficiency of higher education improves, which is in itself a desirable outcome, the expansion of higher education would need to be even more tightly managed to avoid exacerbating the current over-production of graduates. In designing course offerings, it is particularly important to take explicit account of the nature of the economy’s demand for skilled workers. In this context, the lack of success with the “professionalized” courses that were recently launched by the university faculties, supposedly geared toward specific labor market needs, suggests that in fact these institutions have great difficulty in rationalizing their new course offerings.

42. An overly-fragmented and under-specialized “university map”. The public supply of higher education, especially in the university faculty sector, is highly unbalanced at present. With nearly 12,000 students, the University of Antananarivo alone accounts for nearly 70 percent of the students enrolled in the faculties, while the University of Antsiranana enrolls only 400 students; enrollments at the remaining universities lie between these extremes, but all of them serve far too few students to benefit from economies of scale in service delivery (table 8). Thus, in some of the university faculties, annual unit costs can go up as high as FMG 2,000,000 per student (nearly 7 times the starting monthly pay of a primary school teacher in salary grade II). In the specialized schools and institutes attached to the universities where enrollments are generally smaller still, the costs can exceed FMG 7,000,000 per student. The provincial universities not only enroll very few students in a small number of programs, they also appear to have a comparative advantage in no particular field. The lack of specialization

<table>
<thead>
<tr>
<th></th>
<th>Number of students</th>
<th>No. of programs</th>
<th>Index of specialization</th>
<th>No. of students per program</th>
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<tr>
<td>Antananarivo</td>
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<td>20</td>
<td>100</td>
<td>585</td>
</tr>
<tr>
<td>Antsiranana</td>
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<td>2</td>
<td>53</td>
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<td>Fianarantsoa</td>
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<td>4</td>
<td>91</td>
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</tr>
<tr>
<td>Mahajanga</td>
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<td>390</td>
</tr>
<tr>
<td>Toamasina</td>
<td>1,706</td>
<td>6</td>
<td>75</td>
<td>284</td>
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<td>Toliara</td>
<td>950</td>
<td>7</td>
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</tr>
</tbody>
</table>

*Index ranges from 0, denoting an unspecialized university, to 100, denoting a university that is highly specialized.*
inevitably raises unit costs, since it means that identical programs are offered in several universities, with each program catering to a limited number of students.

43. Under the circumstances, a reconfiguration of the “university map” would seem appropriate in order to rationalize program offerings across institutions, and to ensure that new programs are carefully evaluated before they are introduced, taking into account the current supply as well as the demand for them. To be efficient, these measures should be considered as part of a national rather than regional plan, along with a redefinition of student aid policy to address equity concerns. At present, the student aid policy is in fact highly inequitable, with most of the students coming from the better off income groups. Over the course of the 1990s, the average size of the grants has declined, but the share of students who receive a grant—already high to begin with at the start of the decade—rose by between 13 and 52 percent depending on field of study. A student aid policy that is so unselective, with widespread coverage even for fields of study whose graduates have great difficulty landing suitable jobs, is hardly compatible with attempts to increase the system’s external efficiency.

44. Weak management of over-time teaching and non-teaching personnel (PATs). Following the policies implemented in the early 1990s to manage enrollments in higher education, the student-faculty ratio in the public sector became considerably more favorable, falling from 38:1 in 1990, to 22:1 by 1998. However, the official work load of teachers make up only a small part—about 20 percent on average—of the total number of hours that teachers actually teach, the difference being paid for as overtime work under the system of “heures complémentaires.” Between 1992 and 1998, the rate of compensation for overtime teaching rose substantially (by about 160 percent in real terms) while base salaries stagnated. These trends led to a significant increase in the volume of overtime teaching—almost a doubling in some universities—even though enrollments did not increase (table 9). Converted into regular teaching loads, the volume of overtime teaching is equivalent to about 3,500 permanent teaching positions, which implies an effective student-faculty ratio of about 5 students per teacher. The
system clearly faces a serious problem in the management of overtime remuneration, and a tightening of the arrangements, including the imposition of a ceiling on the amount of overtime teaching that individual staff may deliver, would appear appropriate to minimize the adverse effects on the system’s future development.

45. Aside from the foregoing problem, higher education in Madagascar is also overburdened with a chronic excess of administrative and technical staff (*personnel administratifs et techniques*, PATs). Currently, 3,600 PATs are on the payroll of the public universities, accounting for nearly 80 percent of all staff (table 10). While the surplus of PATs affects all the universities, the problem is especially notable at the University of Antsiranana, and to a lesser extent, also at the University of Antananarivo. Despite the strain it puts on the universities’ budgets, the number of PATs has declined very little—by only about 15 percent between 1990 and 1999. Paradoxically, in some years new PATs have been recruited even as measures were put in place to encourage voluntary departure by these staff. A rationalization of these measures would be needed to improve operations in higher education, particularly by facilitating a reallocation of resources to support teaching and other interventions to enhance quality.

**Improving management of the education system**

46. Throughout this paper, reference was made to various management weaknesses in the education system. The problems include: (a) inadequate personnel administration and management, as reflected in the inconsistencies in teacher allocation across schools (particularly primary schools, and the chronic surplus of PATs and lack of discipline in the arrangements for overtime teaching in higher education; (b) poor time management by teachers and students arising from inefficient implementation of multi-grade teaching in primary schools and the prevalence of single-subject teaching in secondary schools; (c) loose management of teaching and learning processes, at both the primary and secondary levels, as suggested by the weak relation between funding for schools and learning outcomes; and (d) inefficient organization of the systems for delivering vocational and technical training and higher education, as reflected in
the duplication of programs across institutions where consolidation and specialization would help lower unit costs and allow the systems to achieve greater diversification in course offerings.

47. Paradoxically, in a system characterized by obvious signs of being poorly managed, substantial resources are in fact spent on administrative staff and system management. Aggregating the expenses at the system-wide level as well as at the level of individual institutions, the share of administrative costs in total spending is 28 percent in primary education, 41 percent in secondary education, 53 percent in vocational and technical education, and 35 percent in higher education, for a global average of 33 percent for the education system as a whole. The latter figure is very high compared to the range of 9 to 22 percent found in a group of 12 developing countries for which comparable estimates exist.

48. The juxtaposition of substantial spending on administration against the obvious deficiencies in the system’s functioning suggests that significant strengthening of management effectiveness needs to be made a top priority in the overall sector development strategy. The idea is not so much to seek an immediate reduction in the amount of spent on administration, though that may well be an appropriate objective for the longer-term, but to identify better ways of using the currently available resources and personnel to improve the way the system functions and delivers services.

Mobilizing an effective response to the challenges

49. The prospects for educational development are as promising as they are fragile in Madagascar today. With public spending on education as a percentage of the GDP anticipated to rise by 40 percent between 2000 and 2003, it is entirely feasible to achieve substantial and tangible progress in education, particularly in terms of service delivery to the poor. Yet the risk of wastage cannot be ignored, given the speed of the projected rise in spending. The challenge therefore is for policy makers to seize the opportunity created by the favorable budgetary context to put in place a solid foundation for efficient and equitable expansion of the system over the medium- and long-term. We can expect the right policy choices to yield an enduring win-win situation, enabling Madagascar to re-establish itself as a leader in education among low-income countries. The main policy challenges that emerge from the education sector study are summarized in table 11 below. How can the government mobilize an effective response to these challenges?
Overall sector strategy

Universalize basic education of reasonable quality while closely linking expansion of other levels and types of education and training to labor market demand

Primary education

Improve survival rates to the end of the primary cycle and reduce grade repetition.

Rationalize teacher allocation across schools and enhance the efficiency of time utilization by teachers.

Enhance student learning by ensuring adequate provision of teaching materials, but especially by improving management of the pedagogical process.

Secondary education

Expand lower secondary enrollments at a moderate pace, while in the upper secondary cycle, focus more on quality improvements than on expansion.

Take advantage of scale economies and increase the practice of multi-subject teaching to manage the high unit costs of service delivery.

Vocational/technical education

Rationalize the supply of training services so as to reduce their high unit costs and align them more closely to labor market needs.

Higher education

Rationalize the system’s structure to improve its quality and responsiveness to the demand for skills on the labor market.

Improve personnel management, particularly the system for compensating overtime teaching, and the use of administrative and technical staff (PATs).

Building a broadly-shared consensus on the nature of the challenges in education as well as possible solutions to address them will obviously be a key ingredient. The process is not new, and has indeed been used in the course of elaborating the government’s ongoing PNAE2. Because the sector study brings to light additional information that can help to refine and flesh out more fully the government’s medium- to long-term sector development strategy, a fresh round of consultation on the new findings and their policy implications can help to clarify the way forward. Further, because the education sector figures so prominently in the country’s poverty reduction strategy, the relevant circle of consultation has necessarily grown to include a larger public. The process of consultation has already begun, with dissemination of the study’s findings among staff in the three ministries at the central and other levels, among the directors of various establishments, as well as among donors and other partners in education. It is a process that could continue with benefit, particularly to inform the design of a concrete, realistic and coherent plan of action for sector development as part of the process of developing the government’s strategy for poverty reduction.
51. Because resources will remain limited even in the current favorable budgetary climate for education, trade-offs among alternative policy options will inevitably present themselves, and must therefore be clarified and managed carefully. The fact that education is organized under three separate ministries, and that related services such as non-formal and preschool education belong to yet two other ministries means that trade-offs across the various sub-sectors will necessarily require arbitration beyond the ministerial level. Yet within each of the three education ministries, important trade-offs also exist. Aside from considerations of cost and benefits, those of timing and sequencing will also be pertinent in weighing the choices. For example, even though basic education should ideally comprise primary and lower secondary education, the current very low survival rates in the first cycle leave no doubt as to the priority in the immediate future between the two cycles of schooling. In assessing the options, lessons from policy innovations in other countries are an important source of ideas, but the innovations must obviously be adapted to the reality of Madagascar’s current level of development as well as the capacity of its social and institutional infrastructure.

52. Finally, creating a system of continuous monitoring and evaluation will be essential in mobilizing an effective response to the challenges. Many of the measures needed to address the key challenges will require consistent and persistent effort over time. Moreover, their impact are often difficult, if not impossible, to anticipate fully. An arrangement to track policy implementation and its outcome is thus critical to ensure that faulty assumptions in policy design and unexpected problems during implementation are rectified in the process. Such a system would also help to create greater accountability for results, by setting explicit benchmarks and agreed targets against which progress can be tracked.

53. Many of the ingredients for mobilizing a successful response to the challenges in education are in fact already in place. Most importantly, the government has made explicit its commitment to poverty reduction, and each of the three ministries have launched significant reforms in recent years to improve service delivery. Persisting with the best of these reforms, and further clarifying other measures needed to reinforce them will undoubtedly contribute to enhancing educational outcomes in Madagascar, benefiting young people everywhere in the country, but especially those from poor families in rural areas.