

**IDA RESULTS MEASUREMENT SYSTEM:
UPDATE NOTE**

**OCTOBER 29, 2003
OPERATIONS POLICY AND COUNTRY SERVICES**

ABBREVIATIONS AND ACRONYMS

CFAA	Country Financial Accountability Assessment
DECDG	Development Economics Data Group
DHS	Demographic and Health Survey
FY	Fiscal Year
GDP	Gross Domestic Product
GNI	Gross National Income
HIPC	Heavily Indebted Poor Country
HIV	Human Immunodeficiency Virus
IDA	International Development Association
IEA	International Energy Association
IMF	International Monetary Fund
ITU	International Telecommunication Union
LSMS	Living Standard Measurement Survey
MDG	Millennium Development Goal
MLD	Mean Logarithmic Deviation
PEM	Public Expenditure Management
PER	Public Expenditure Review
PREM	Poverty Reduction and Economic Management
PRSP	Poverty Reduction Strategy Paper
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations Children's Fund
UNSD	United Nations Statistical Department
WHO	World Health Organization
WHS	World Health Survey

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EXECUTIVE SUMMARY

1. The introduction of a framework for measuring results was an innovation of the IDA13 replenishment arrangement. The objective is to better assess the effectiveness of IDA programming in contributing to key development outcomes, including those reflected in the Millennium Development Goals (MDGs) and in the growth agenda underpinning these goals. The IDA13 arrangement called for the development of a system that reflects country priorities, links to the MDGs, and assesses IDA's contribution to development results.

2. **Results Measurement System for IDA14 and Beyond.** The system proposed in a paper prepared by IDA Management,¹ consists of two tiers of information. The first tier monitors the aggregate progress of IDA-eligible countries on core development outcomes. The 15 outcome indicators originally proposed reflect country priorities embodied in national poverty reduction strategies as well as alignment with the MDGs. The second tier focuses on the contribution of IDA-supported activities to country outcomes. It relies on the introduction of a stronger focus on results and self-assessment in the World Bank's Country Assistance Strategies, and on assessment of the quality and outcomes of operations in the IDA portfolio.

3. **IDA Meeting.** On April 10, 2003, IDA Deputies and borrower representatives reviewed the proposed system. They agreed in principle with the architecture and approach, but asked that greater consideration be given to alternative indicators in the areas of governance, infrastructure and social equity. In addition, there was considerable debate, both among Deputies and during consultations with borrower representatives, about the private sector development indicators. This note reports on Management's findings from its work in response to these discussions.

4. **Recommendations for Indicators.** Management's analysis leads to the recommendation to include the original governance and private sector development indicators for consideration, present two new indicators on transport and energy use for consideration, and retain original indicators on growth and poverty incidence to best capture information on social equity.

- **Governance.** Although the proposed *public expenditure management* indicator does not cover all aspects of governance, it focuses on an aspect that increasingly determines aid effectiveness as the donor community moves to a country-led business model with greater pooling of aid flows. It is also an aspect that IDA actively supports. For these reasons—as well as the availability of data and the transparent methodology relative to alternatives considered—it is assessed as the best available indicator at this time.
- **Private Sector Development.** Most alternative indicators on the business environment explain the flow of foreign investment into an economy, but not the flow of domestic private investment. Although the proposed indicators—*time and formal cost of business registration*—do not cover firms in rural areas, analysis shows close correlation between urban and rural indicators. Because the indicators reflect

¹ *IDA Results Measurement System: Progress and Proposal and Technical Annexes* (IDA/SecM2003-0159), April 7, 2003.

incentives to become formally registered, they are directly relevant for informal sector firms. The Bank considers these indicators to be the best currently available to measure the incentive for businesses to invest in IDA countries.

- **Transport.** *Access of the rural population to an all-season road* has sufficient initial data availability to be considered for inclusion in the IDA results measurement system, and it addresses an important prerequisite for pro-poor growth. However, a note of caution is warranted for this untested time series, as it remains to be seen whether adequate new data would be generated from household surveys to permit aggregate monitoring on a three-year cycle.
- **Energy Use.** In the short run—during the IDA14 period—IDA Deputies and borrower representatives may wish to consider including electrification rate as the best available indicator of energy use. In the longer run, however, efforts should be made to develop a more comprehensive indicator of modern energy use that would include both access to electricity and use of modern fuels for cooking.
- **Social Equity** The original proposal to monitor aggregate change in GDP per capita and dollar-a-day poverty provides sufficient information on the extent of pro-poor growth over time. Combining this information in a single pro-poor growth indicator would mean losing valuable information on growth and poverty reduction, while movement to a pure measure of income inequality would limit information further, and is not considered a priority in national poverty reduction strategies.

5. **Conclusions.** In the Spring of 2004, as discussions of IDA14 begin, IDA Deputies and borrower representatives will face important decisions about the monitoring of aggregate country outcomes within the results measurement system. They will need to reach consensus on a set of country outcome indicators, each with different merits. The 17 indicators proposed for consideration (the original 15 plus new indicators for transport and energy use) are those that—at this time—best meet the three criteria of relevance to key development outcomes, sensitivity to policy actions, and measurability in a sufficient number of IDA countries. However, to varying degrees, the ability to monitor these indicators on a regular basis—and the quality of the resulting information—are dependent on expanded coverage, increased periodicity, and standardization of questions within household surveys and other data-gathering mechanisms. The implications for the international community are twofold. First, a greater financial and technical commitment will be needed to strengthen statistical capacity and monitoring and evaluation systems in low-income countries and to reinforce international reporting systems. Second, expectations must remain realistic for improvements across a range of indicators in countries with limited capacity. Thus, it is especially important to reach consensus on a small number of indicators that countries identify as highly relevant for managing their development processes. The original proposal of 15 indicators can be considered ambitious in this regard.

6. **Next Steps.** In preparation for the discussion of the IDA results measurement system, Management will prepare a report that shows how data can be aggregated for the 17 indicators and how the indicators move over a three-year IDA cycle. This will allow IDA Deputies and borrower representatives to review data availability, the merits of the different indicators, and their change over a typical IDA period, as they consider the selection of country outcome indicators for the IDA14 period.

IDA RESULTS MEASUREMENT SYSTEM: UPDATE NOTE

I. INTRODUCTION

1. A framework for measuring results was an innovation of the IDA13 replenishment arrangement. It was embodied in the creation of an interim system to monitor results during the IDA13 period as well as in the undertaking to develop a more robust system to measure results in IDA14 and beyond. The purpose of the results measurement system is to better assess the effectiveness of IDA programming in contributing to key development outcomes, including those reflected in the Millennium Development Goals (MDGs) and in the growth agenda underpinning these goals.

2. ***Proposed Results Measurement System.*** The IDA13 arrangement called for a results measurement system that would (a) reflect the priorities and processes of national poverty reduction strategies; (b) be linked to the MDG framework; (c) show aggregated results across IDA countries; and (d) assess IDA's contribution to development results.¹ The system proposed in the paper *IDA Results Measurement System: Progress and Proposals and Technical Annexes* was designed to satisfy these conditions.² It had two tiers that addressed the two key aspects requested: aggregate country outcomes and IDA's contribution to these outcomes.

- ***Monitoring aggregate country outcomes.*** The first tier of the enhanced results measurement system proposed 15 indicators to measure the progress of IDA-eligible countries on core development outcomes (Annex A reproduces the table of proposed indicators presented in the paper). These indicators were chosen to be consistent with country priorities articulated in national poverty reduction strategies, aligned with MDG indicators, and relevant to IDA's mandate and activities in borrowing countries. Indeed, most of the indicators are considered in Poverty Reduction Strategy Papers (PRSPs), either as specific targets or as subjects for discussion in the text. Ten are MDG indicators. The others are complementary, related to growth for poverty reduction, and reflecting IDA's support for the economic growth, private sector development, and public sector management that are necessary to reduce poverty.
- ***Monitoring IDA's contribution to country outcomes.*** The second tier of the proposed results measurement system involves (a) introducing a stronger focus on results and a self-assessment system in World Bank Country Assistance Strategies in IDA-eligible countries, and (b) assessing the quality and outcomes of projects in the IDA portfolio, drawing on data from the Operations Evaluation Department and the Quality Assurance Group.

¹ *Additions to IDA Resources: Thirteenth Replenishment Supporting Poverty Reduction Strategies.* (IDA/R2002-0136-0159), July 12, 2002.

² *IDA Results Measurement System: Progress and Proposal and Technical Annexes* (IDA/SecM2003-0159), April 7, 2003.

3. **IDA Meeting.** At a meeting on April 10, 2003, the IDA Deputies and borrower representatives reviewed the proposed system. Participants broadly agreed in principle with the architecture proposed for an enhanced results measurement system for IDA14 and beyond, and agreed that such a system would improve the assessment of IDA countries' progress on growth and the MDGs.³ The April meeting also recognized the importance of choosing a limited set of indicators for monitoring aggregate country outcomes, and of maintaining the stability of these indicators over time. However, participants requested that consideration be given to alternative indicators in the areas of governance, infrastructure and social equity, while also expressing some concern about adding to the burden on countries' overstretched capacity to collect and process data. Deputies asked Management to provide an update note on this indicator work at the IDA13 Mid-Term Review.

4. **Purpose of this Note.** This note reports on Management's findings from its work to assess alternatives and define additional indicators as requested at the April meeting and in response to debate over indicators that measure progress in private sector development. This note will serve as an input into a comprehensive report to be considered by Deputies at the time of the IDA14 Replenishment negotiations, which will discuss the monitoring of potential indicators over an IDA cycle as well as progress in the difficult arena of evaluating IDA's contribution to development outcomes, including through the adoption of results-based Country Assistance Strategies in IDA-eligible countries.

II. INDICATORS FOR COUNTRY OUTCOME MONITORING

5. This note first reexamines the proposed indicators and their alternatives in the areas of governance and private sector development and then assesses the relevance, sensitivity, and measurability of potential indicators in the areas of transport, energy use, and social equity. This section looks at each of these indicators in turn.

A. Governance

6. Initial discussions of the IDA results measurement system suggested inclusion of an indicator of aggregate progress on governance or public sector management. Alternatives were assessed, and a *public expenditure management* indicator was included in the initial proposal.

7. **Public Expenditure Management.** A composite public expenditure management indicator was proposed as the best available indicator for a key aspect of governance in developing countries. The indicator (described in Annex B) was originally developed at the request of the Boards of the Bank and the IMF in 2000, in connection with the monitoring and evaluation of the Heavily Indebted Poor Countries (HIPC) program. It measures the extent to which the management of public expenditures, judged by 15 benchmarks, conforms to good practice and therefore indicates good governance. The 15 benchmarks were chosen on the basis of experience and research as measures of the quality of public expenditure management, reflecting efficiency and accountability in the use of public resources. Data on this indicator are currently available in 24 IDA countries (which are also HIPC countries), and their ratings will be comprehensively reassessed by end-2004. Plans are in hand to extend the coverage of this indicator to more than 30 IDA countries by 2005.

³ Chairman's Summary: IDA Deputies' Meeting, Washington, D.C., April 10, 2003.

8. ***Alternative Governance Indicators.*** In reviewing the proposed indicator, the participants in the April meeting noted that it does not cover the full range of governance issues (e.g., public service delivery, democratic processes), and for this reason they requested additional analysis of alternatives. Public and private institutions prepare and use various governance indicators based on some or all of the following: (a) objective data on public resources (e.g., budgets) and services (e.g., teacher absenteeism); (b) expert assessments of institutional performance, based on situation-specific and transparent criteria (e.g., goal achievement in the execution of public functions); (c) expert assessments based on externally determined benchmarks (e.g., models of oversight and accountability); (d) surveys of recipients/users of public regulation and services (e.g., tax and corruption payments by business enterprises); and (e) analyses of public and stakeholder perceptions of governance performance (e.g., surveys of people’s perception of democracy). These governance indicators serve such purposes as identifying weaknesses and possible solutions; monitoring progress in governance; allocating aid and debt relief; and creating public awareness of and debate on governance. While each of these indicators is useful in some circumstances, they often have an insufficiently objective basis or are methodologically weak, lacking transparency in criteria, rating, and ranking methods.

9. ***Current Recommendation.*** Although the proposed public expenditure management indicator does not cover all aspects of governance, it focuses on an aspect that increasingly determines aid effectiveness as the donor community moves to a country-led business model with greater pooling of aid flows and integration in domestic budgets. It is also an aspect that IDA actively supports. Since a key feature of the poverty reduction strategy approach is to encourage pro-poor budgets in low-income countries, public expenditure management is relevant to all IDA-eligible countries. The Bank supports countries in developing action plans to improve public expenditure management systems as an integral part of national poverty reduction strategies. For these reasons—as well as the relative availability of data and the transparent methodology—we recommend that the public expenditure management indicator be considered for aggregate county outcome monitoring during the IDA14 period.

10. ***Future Enhancements.*** The Bank is working with partners to improve the public expenditure management indicator and to help develop more robust measures of governance in other areas. For the public expenditure management indicator, the work involves developing a broader set of benchmark measures, including those related to revenue mobilization and procurement.⁴ At the same time, the Bank is working on a more comprehensive set of governance progress indicators with which to better assess the contribution of Bank-supported operations to governance.⁵ Three areas relevant to governance are being considered: (a) public financial management and accountability, (b) public administration reform, and (c) institutional checks and balances. However, it will be several years before a more comprehensive governance indicator becomes operational and could be considered for use within the IDA results measurement system.

⁴ This work is being led by the Bank’s Poverty Reduction and Economic Management network (PREM), Financial Management and Procurement Offices, and the IMF’s Fiscal Affairs Division, in collaboration with international partners, supported by the Public Expenditure and Financial Accountability program secretariat in the Bank.

⁵ PREM’s Public Sector Anchor is working to formulate governance progress indicators that would enable operational staff and clients to monitor improvements in governance that are logically associated with Bank-supported governance operations (programs, investments, or analytical and advisory services) and would go beyond issues of public expenditure management. It is intended that governance progress indicators would measure intermediate outcomes and processes in public sector governance.

B. Private Sector Development

11. The initial proposal for a results measurement system included two indicators of private sector development: the formal cost of business registration, and the time required for business registration. These indicators assess the incentives for the private sector to invest in any country, improve productivity, and create jobs. At the April review and during consultations with borrower representatives, participants expressed concern that these indicators cover only the formal sector and are predominantly about urban enterprises, whereas many IDA countries have large rural and informal sectors. They raised questions about the accuracy and comprehensiveness of the measures, possible biases in the data due to the small sample size used to collect data, and the availability of data for this indicator during future IDA programs.

12. ***Time and Formal Cost for Business Registration.*** The proposed indicators are two of a larger set of indicators that were developed by the World Bank Group and have been widely used.⁶ They address the concerns of IDA Deputies and borrowers' representatives because time and cost of business registration indicators relate closely to the size of the informal economy. Since obstacles to business registration are a primary determinant of the size of the informal sector, these indicators are directly relevant for IDA countries in which a large share of business activity is in the shadow economy. Reducing entry barriers encourages entrepreneurs to operate in the formal sector in these countries. The indicators are available with the shortest time lag among alternatives (for example, January 2004 data will be available in Spring 2004), and are sensitive to changes in policies and laws. The indicators are updated annually by the Bank, and accuracy is tested through multiple rounds of data collection with local experts and through readings of the laws and regulations in force (see Annex C for details). Underlying the time and cost of business registration measures is a list of procedures that cause bottlenecks; governments can identify specific problems and know what needs to be reformed. These indicators have already had some success in generating reforms in IDA countries. For example, analysis of the entry indicators in Ethiopia revealed that the high cost of business registration was driven by the requirement to publish a public notice. Dialogue between the Bank and Government resulted in a 30 percent decrease in the publication cost, and Ethiopia's cost of registration fell from the highest in the IDA sample to around the average.

13. ***Alternative Private Sector Indicators.*** Changes in macro-level indicators related to investment, savings, and credit availability are difficult to interpret when monitored in aggregate, insufficiently sensitive to government policy action and easily influenced by external shocks. Beyond this, a number of agencies and organizations rate the risks of starting and sustaining businesses in various countries, primarily for audiences of international portfolio investors, global lenders, and executives of multinational companies. Foreign investors use such expert advice because they are able to avoid or withdraw from countries with a perceived high level of risk; however, local investors who need to operate in difficult environments rarely have the choice of withdrawing. Staff's analysis shows that these alternative indicators have limited ability to measure the performance of the regulatory and legal requirements for business registration or the ultimate performance of the enterprises. Indeed, recent research shows that the indicators generated by these agencies

⁶ See *Doing Business in 2004: Understanding Regulation*, New York: Oxford University Press and the World Bank, 2003.

explain the flow of foreign investment into an economy, but not the flow of domestic private investment.⁷

14. ***Current Recommendation.*** Although the proposed indicators do not cover firms operating in rural areas, country analysis shows that business registration indicators in urban and rural areas are closely correlated. In addition, because the indicators reflect the incentives for a firm to become formally registered, they are directly relevant for firms operating in the informal sector. And the methodology for collecting data on these indicators is designed to address concerns about sample size: it assesses the laws and regulations in force and includes verification and input from specialized experts on the topic, with several rounds of communication to eliminate errors and reach agreement. While there is still room for improvement, Management considers that the time and formal cost of business registration are at present the best indicators available to measure the incentive for businesses to invest in IDA countries.

15. ***Future Enhancements.*** By the end of 2003, the sample will be extended to 140 countries, including data for indicators in 58 IDA countries. In addition, the number of expert respondents in the assessment instrument will be increased to ensure more robust results. The Doing Business Project complements the business registration indicators with 10 other sets of indicators on the regulatory environment for business, and additional indicators—such as business licensing and inspections and property titling—are under development.

C. Transport

16. During consultations with IDA borrowers on the proposed results measurement system, country representatives highlighted the importance of economic infrastructure—especially transport—to underpin pro-poor growth and improve social inclusion. Surveys have shown that poor people view isolation as a major contributor to their poverty and marginalization. It is estimated that about 700 million rural dwellers in developing countries (one-third of rural inhabitants in developing countries) lack reliable access to a road. Those without access to roads, and therefore markets, face high marketing margins for inputs and outputs, which reduces farm and household incomes and raises the supply price for farm products. Isolation also inhibits access to basic social services. Therefore, improving access of rural households to roads is an important means of raising incomes, reducing poverty, and improving access to social services such as education and health care.

17. ***Potential Indicator.*** An indicator that reflects the potential for pro-poor growth is *access of the rural population to an all-season road*. Access is defined as living within 2 kilometers (an estimated 20-minute walk) of a road that can be traveled by the prevailing means of transport all year round. This indicator is not currently calculated and reported regularly to international databases, but it has been measured and established previously. There are two potential approaches to measurement: (a) collecting information through household surveys; and (b) using road and population mapping to determine how many people live within the specified catchments of the road network. Bank staff is assessing data availability using both approaches, and has found that household surveys currently offer the

⁷ Geeta Batra, "Investment Climate Measurement; Pitfalls and Possibilities," Discussion Paper, May 2003, Investment Climate Unit, Private Sector Vice-Presidency, World Bank, Washington, D.C., 2003.

greatest potential to reliably calculate this indicator (see Annex D for details). Using both approaches, about half the IDA countries have good prospects for establishing this indicator in medium term. Preliminary measures have been calculated for 13 IDA countries, and it is expected that information on about 30 countries could be calculated from existing country data sets by the time of the IDA14 Replenishment discussions. Most of the data will be from household surveys, but it will be corroborated in some cases by mapping information.

18. ***Current Recommendation.*** *Access of the rural population to an all-season road* has a clear definition and sufficient initial data availability to be considered for inclusion in the IDA results measurement system. Both IDA Deputies and borrowers have shown enthusiasm for a rural roads indicator (*or an indicator that captures progress in rural development and infrastructure*). In addition, it may be included in the 2004 edition of *World Development Indicators*. However, it remains to be seen whether adequate new data would be generated from household surveys to permit aggregate monitoring on a three-year cycle. Hence, a note of caution is warranted in including an untested time series in the IDA system.

19. ***Future Enhancements.*** The Bank has taken steps to raise awareness of the significance of the indicator and to encourage countries to collect the necessary data, particularly through household surveys. In collaboration with partner organizations, the Bank is developing a work program to ensure the sustainability of the proposed indicator through regular updating of household surveys and expansion of coverage to additional countries. In parallel, it will further evaluate the option of using mapping data to complement survey analysis.

D. Energy Use

20. The April review meeting led to the assessment of potential indicators of energy use for the IDA results measurement system. Indeed, the extent to which modern energy is used for lighting, heating, and cooking signifies an important welfare improvement for poor households that otherwise must rely on polluting and hazardous traditional fuels (solid fuels such as coal, and biomass fuels such as wood). Energy services are provided most cheaply and conveniently—and with the least local pollution—when they are derived from modern energy (electricity, natural gas, biogas, and petroleum fuels).

21. ***Potential Indicators.*** International norms and standards are not fully specified for measurement of modern energy use, and reporting systems are fragmented. Within these constraints, and taking into account the relevance of potential indicators to poverty reduction, their sensitivity to policies, and current measurability, the narrow indicator of *household electrification rate* would be the best choice available at this time. This indicator would be based on data collected from specialized household surveys and electricity utility records. Recent assessment by Bank staff indicates that baseline data for 2003 or 2004 would be available for at least half of the IDA countries, with updates or additional information for most of the IDA countries in 2005 or 2006. However, a disadvantage of electrification rate is that it does not provide information on households' use of modern energy for cooking, which is perhaps the more important indicator of welfare among poor households. A more comprehensive indicator would address both electrification and households' use of modern

energy for cooking.⁸ The main challenge for the construction of such an indicator is that information on households' energy use can only be derived from surveys that are often not conducted with the frequency necessary to establish the three-year monitoring cycle associated with IDA (Annex E provides additional information on both indicators of energy use).

22. **Current Recommendation.** In the short run—during the IDA14 period—IDA Deputies and borrowers may wish to consider including electrification rate as the best available indicator of energy use. In the longer run, however, efforts should be made to develop a more comprehensive indicator of modern energy use by households.

23. **Future Enhancements.** Analysis in recent months indicates that a number of household surveys that are conducted with some regularity in IDA countries—for example, Living Standard Measurement Surveys, Integrated Surveys of the World Health Organization's World Health Survey, and the Demographic and Health Surveys financed by USAID—either provide information on household energy use or could do so in the future. The international community is working both to expand coverage of such surveys in IDA-eligible countries and to standardize appropriate questions. Thus, it may be possible to develop an indicator that measures the *proportion of people who have an electricity connection in their home and who use modern energy as their main cooking fuel*. Following up on work to date, the question of whether or not a composite energy indicator can be developed for a significant share of IDA countries during the IDA14 period—and updated with reasonable periodicity—will be further assessed in the comprehensive report for Deputies' consideration during the upcoming replenishment discussions.

E. Social Equity

24. At the April 2003 meeting, IDA Deputies and borrower representatives considered two indicators of poverty reduction: per capita GDP and the incidence of “dollar-a-day” poverty (i.e., the poverty headcount index using the poverty line of \$1 per capita per day based on the purchasing power parity of consumption expenditures). They asked Management to explore also the possibility of formulating an indicator to measure changes in social equity.

25. **Potential Indicators.** The original indicators proposed provide some information on social equity. Over time, the extent to which growth in GDP per capita is pro-poor is reflected in a decline in dollar-a-day poverty. The combination of information about change in per capita GDP and the incidence of poverty indicates the extent of *pro-poor growth*. This can be more directly calculated by comparing growth of income among the poorest quintile of the population to average income growth in IDA countries. However, substituting this single measure for the two proposed indicators would provide little additional information on social equity, while eliminating important information on both growth trends and poverty incidence. Alternatively, an indicator can be formulated to assess *change in income inequality* in IDA countries. One way to do this is to calculate the difference between (a) the growth rate of average income per capita for all IDA countries, and (b) the average of the growth rates of per capita income across all percentiles in the distribution of IDA countries

⁸ Since households' consumption of modern energy for heating is important only in countries where cold causes hardship, the comprehensive indicator would cover only the use of modern fuel for cooking.

(see Annex F). If the difference in the growth rates is negative it indicates that inequality has been reduced; if the difference is zero then there has been no change in inequality; and if the difference is positive then inequality has increased. However, this indicator does not provide information about whether specific groups (such as the poorest) have become better or worse off.

26. ***Current Recommendation.*** Management considers that the original proposal to monitor aggregate change in GDP per capita and dollar-a-day poverty provides sufficient information on the extent of pro-poor growth over time. Combining this information in a single indicator would mean losing valuable information on growth and poverty reduction. The calculation of changes in income inequality is an interesting indicator for country-specific applications. However, the desired direction of change is not necessarily the same across all IDA countries. Thus it is not useful for aggregate monitoring of progress towards a desired outcome. In addition, income inequality has rarely been flagged as a priority issue in national poverty reduction strategies, whereas nearly all low-income countries identify insufficient growth and poverty reduction as priority issues. Given the need to choose a limited set of country outcome indicators for aggregate monitoring, the original proposal appears most likely to meet the need for information on growth, poverty reduction, and social equity.

27. ***Future Enhancements.*** The Bank has in place the process to calculate dollar-a-day poverty, pro-poor growth and changes in inequality—as needed—every three years, drawing on new data from household income and expenditure surveys in some IDA countries. Baseline data for 2002 would be available at the start of the IDA14 period. The quality of these calculations can be enhanced through expanded coverage, improved periodicity, and strengthened quality control of household income and expenditure surveys. The international community has initiated discussions on how to increase and rationalize current support for household surveys.

III. ALIGNMENT WITH MDGs AND PRSP PRIORITIES

28. The initial request for a system to measure the results of IDA's assistance called for an approach that would be rooted in country priorities and would reflect IDA's commitment to the MDGs. It was also agreed in early consultations that the system needed to reflect the growth agenda underpinning poverty reduction—an area where PRSP monitoring systems have tended to be weak, but IDA engagement is strong.

29. ***Alignment with MDGs.*** Ten of the 15 outcome indicators originally proposed for the results measurement system are MDG indicators. The other five are indicators of economic infrastructure, private sector development, rural development, and governance—areas that are considered essential to stimulate growth for poverty reduction. The indicators for transport, energy use, and social equity discussed in this note are not among the MDG indicators.⁹ For transport and energy use, this may be less a question of development priorities than one of poor data availability and/or inadequate reporting systems.

30. ***Alignment with PRSP Priorities.*** Table 1 summarizes the extent to which the 15 original indicators and the three new ones introduced in this note are reflected in the 32

⁹ However, the proportion of population using solid fuels is an MDG indicator.

PRSPs completed as of July 2003. The indicators may be reflected directly, through inclusion of the indicator, or indirectly, through discussion of the priority area an indicator represents. Twelve of the 15 original indicators reflect priorities articulated in the majority of PRSPs. Of the three new indicators examined in this note, rural roads and electrification rate are priorities articulated in at least half of the PRSPs, although inclusion of the roads indicator is fairly low—probably reflecting definitional variations and data constraints. Change in inequality is articulated as a priority in less than a quarter of existing PRSPs, and the indicator is included less than ten percent of the time.

Table 1. The Use of IDA Country Outcome Indicators in PRSPs

	<i>PRSPs that include indicator^a</i>	<i>PRSPs covering subject</i>	<i>Availability in WDI database^b</i>	<i>Typical frequency of reporting</i>	<i>Agency responsible for data compilation^c</i>
	%	%	%		
1. Proportion of population below \$1/day poverty line	13	100	72	Every 3-5 years	World Bank
2. Prevalence of underweight children under five years of age	44	63	97	3 years	UNICEF, WHO
3. Under-5 mortality	72	97	100	3 years	UNICEF, WHO
4. Proportion of 1 year old children immunized against measles	9	72	100	Annual	UNICEF, WHO
5. HIV prevalence rate of pregnant women 15-24	3	69	91	Only available for 1999	UNAIDS, UNICEF
6. Proportion of births attended by skilled health personnel	59	72	84	3-5 years	UNICEF, WHO
7. Ratio of girls to boys in primary, secondary and tertiary education	69	78	94	Annual	UNESCO
8. Primary school completion rate	31	100	100	Annual	UNESCO
9. Proportion of population with sustainable access to an improved water source	94	94	100	3 years	UNICEF, WHO
10. Fixed lines and mobile telephones per 1,000 inhabitants	25	34	97	Annual	ITU, World Bank
11. Formal cost of business registration	3	13	72	Annual	World Bank
12. Time for business registration	6	13	75	Annual	World Bank
13. Public expenditure management	0	100	Na	TBD	World Bank
14. Agricultural value added	22	66	94	Annual	UNSD, World Bank
15. GDP per capita	41	100	94	Annual	UNSD, World Bank
16. Access of rural population to an all-season road	16	44	Na	TBD	World Bank
17. Household electrification rate	34	59	Na	3 years	World Bank
18. Change in inequality	9	22	Na	Every 3-5 years	World Bank

Note: n/a = not applicable; TBD= to be determined.

^a At the end of July 2003, 32 countries had PRSPs in place.

^b As a percentage of countries eligible for IDA borrowing.

^c Data used for indicators 1-10 are based on national government data collection as presented in the World Development Indicators.

IV. CONCLUSIONS

31. In the Spring of 2004, as discussions of IDA14 begin, Deputies and borrower representatives will face important decisions about the monitoring of aggregate country outcomes within the results measurement system. They will need to reach consensus on a set of country outcome indicators, each with different merits. The 17 indicators proposed for consideration (the original 15 plus new indicators for transport and energy use) are those that—at this time—best meet the three criteria of relevance to key development outcomes,

sensitivity to policy actions, and measurability in a sufficient number of IDA countries. However, to varying degrees, the ability to monitor these indicators on a regular basis—and the quality of the resulting information—are dependent on expanded coverage, increased periodicity, and standardization of questions within household surveys and other data-gathering mechanisms. The implications for the international community are twofold. First, a greater financial and technical commitment will be needed to strengthen statistical capacity and monitoring and evaluation systems in low-income countries and to reinforce international reporting systems. Second, expectations must remain realistic for improvements across a range of indicators in countries with limited capacity. Thus, it is especially important to reach consensus on a small number of indicators that countries identify as highly relevant for managing their development processes. The original proposal of 15 indicators can be considered ambitious in this regard.

32. *Next Steps.* In preparation for the discussion of the IDA results measurement system, Management will prepare a report that demonstrates aggregate monitoring of the 17 indicators over a three-year IDA cycle. This will allow IDA Deputies and borrower representatives to review data availability, the merits of the different indicators, and their change over a typical IDA period, as they consider the selection of country outcome indicators for the IDA14 period.

ORIGINAL LIST OF COUNTRY OUTCOME INDICATORS, APRIL 2003

Indicator	Percent of PRSPs that include the indicator ^a	Percent of PRSPs that highlight priority	Range of most recent year data for IDA countries	Number of IDA countries with data in the latest year ^b	Number of IDA countries with sufficient data to calculate growth from 1990 ^c	Historical annual rate of growth ^d for IDA countries	Annual rate of change required to meet MDG target from 1990 ^e
1. Proportion of population below \$1/day poverty line ^f	13	91	1995-2000	35	30	f/c	..
2. Prevalence of underweight children under five years of age	35	60	1995-2001	65	35	-1.4	-2.8
3. Under-5 child mortality	65	96	2001	80	80	-1.9	-4.4
4. Proportion of 1-year-old children immunized against measles	9	70	2001	79	72	0.4	1.7
5. HIV prevalence rate of pregnant women aged 15-24	-	52	1999-2001	57	-
6. Proportion of births attended by skilled health personnel	48	100	1995-2000	72	42	-0.7	2.9
7. Ratio of girls to boys in primary and secondary education	61	61	1998	52	47	1.3	2.2
8. Primary school completion rate	22	35	1998-2001	71	46	0.5	1.5
9. Proportion of population with sustainable access to an improved water source	74	74	1993-1999	75	35	1.7	0.9
10. Fixed lines and mobile telephone per 1000 inhabitants	13	17	2001	70	30	15.5	n/a
11. Formal cost required for business start-up	n/a	48	2002	39	-	..	n/a
12. Time required for business start-up	n/a	48	2002	39	-	..	n/a
13. Public expenditure management	n/a	100	2001-2002	25	n/a	6.0 ^g	n/a
14. Agricultural value added	22 ^h	70	1995-2001	61	72	2.8	n/a
15. GDP per capita	39	100	2001	75	73	2.1	n/a

Source: IDA Results Measurement System: Progress and Proposals and Technical Annexes (IDA/SecM2003-0159), April 7, 2003.

Notes:

(..) means insufficient data, (n/a) means not applicable, (-) means zero, (f/c) means forthcoming.

^a As of end December 2002, 23 countries had full PRSPs. Table 1 in the main text updates all figures on the basis of the 32 PRSPs completed by end-July 2003.

^b All data are taken from the latest 2003 *World Development Indicators* database.

^c A country has been included in the calculation of growth if estimates for both end points (1990 and the latest year) either exist or can be extrapolated.

^d Calculated between the end points, i.e., the population weighted average in 1990 and the latest year for which data are available, using the exponential growth method.

^e Since two of the MDG indicators in this table do not relate directly to the MDG targets, illustrative targets have been used based on achieving, by 2015, 90 percent measles vaccination coverage, and 90 percent of births attended by skilled health personnel.

^f \$1/day poverty indicator calculated by the World Bank based on national poverty data used in the preparation of PRSPs.

^g Average number of public expenditure management benchmarks met out of 15 total in sample countries.

^h Includes countries that have monitoring plans for agricultural value added growth indicator.

PUBLIC EXPENDITURE MANAGEMENT INDICATOR

Definition and Rationale

1. In 2000, at the request of the Boards of the World Bank and the IMF, Bank and IMF staff developed and applied an instrument for assessing public expenditure systems in countries active in the Heavily Indebted Poor Country (HIPC) Initiative. This experience was summarized in two papers¹ and was recently reviewed by the Executive Directors of the two institutions.²
2. Fifteen benchmark indicators were chosen as critical elements of the public expenditure management (PEM) system capabilities deemed necessary for tracking poverty-reducing public spending. Seven of the indicators relate to budget preparation and four each to execution and reporting (see Table B1).
3. The total number of PEM benchmarks met by a country can be viewed as an indicator of the quality of its PEM system. However, some caution needs to be exercised in using such an indicator because the benchmarks include both performance (level of arrears, timeliness of reporting) and institutional indicators (internal audit, medium-term expenditure framework). Not all indicators have equal importance in the abstract or in any given country context. Moreover, the instrument and benchmarks were developed bearing in mind reasonable expectations of the current capacity and likely progress of PEM systems in HIPCs.
4. Given these inherent limitations, an average measure of PEM benchmarks met by countries should be used, in the form of the average aggregate number of benchmarks reached. (Since most sampled countries are at present in Africa, it will be difficult to monitor Regional variations in performance.)
5. Country performance on the 15 benchmarks was first assessed in FY02. At the time of this review, it was found that the 24 sampled HIPC countries³ met, on average, 6 benchmarks.⁴

Note: This annex was prepared by William Dorontinsky, Poul Engberg-Pedersen, and Steve Knack.

¹ See *Tracking of Poverty-Reducing Public Spending in Heavily Indebted Poor Countries—Revision 1* (IMF SM/01/16), March 28, 2001, and (IDA\SECM2001-51\1), March 30, 2001; and *Actions to Strengthen the Tracking of Poverty-Reducing Public Spending in HIPCs—Revision 2* (IDA/SECM2002-30/2), March 22, 2002, and (IMF SM/O2/30), March 28, 2002.

² See *Update on Implementation of Action Plans to Strengthen Capacity of HIPCs to Track Poverty-Reducing Public Spending* (IDA SECM2003-0077), March 17, 2003.

³ Benin, Bolivia, Burkina Faso, Cameroon, Chad, Ethiopia, The Gambia, Ghana, Guinea, Guyana, Honduras, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nicaragua, Niger, Rwanda, São Tomé and Príncipe, Senegal, Tanzania, Uganda, and Zambia.

⁴ The update in FY03 addressed progress in countries' implementation of action plans, not actual progress on the benchmarks, which will be measured in 2004.

Table B1. Expenditure Tracking Assessment Instrument in HIPC countries

	<i>Budget Management</i>	<i>Benchmark Description</i>
Formulation	Comprehensiveness	
	1. Composition of the budget entity	Meets Government Finance Statistics definition of general government
	2. Limitations to use of off-budget transactions	Extra (or off-) budget expenditure is not substantial
	3. Reliability of budget transactions	Level and composition of outturn is “quite close” to budget
	4. Data on donor financing	Both capital and current donor-funded expenditures included
	Classification	
	5. Classification of budget transactions	Functional and/or program information provided
Execution	6. Identification of poverty-reducing expenditure	Identified through use of classification system (e.g. a virtual poverty fund)
	Projection	
	7. Quality of multi-year expenditure projections	Projections are integrated into budget formulation
Reporting	Internal Control	
	8. Level of payment arrears	Low level of arrears accumulated
	9. Quality of internal audit	Internal audit function (whether effective or not)
	10. Use of tracking surveys	Tracking used on regular basis
Reporting	Reconciliation	
	11. Quality of fiscal/banking data reconciliation	Reconciliation of fiscal and monetary data carried out on routine basis
	Reporting	
	12. Timeliness of internal budget reports	Monthly expenditure reports provided within four weeks of end of month
	13. Classification used for budget tracking	Timely functional reporting derived from classification system
Reporting	Final Audited Accounts	
	14. Timeliness of accounts closure	Accounts closed within two months of year end
	15. Timeliness of final audited accounts	Audited accounts presented to legislature within one year

6. Since a key feature of the poverty reduction strategy paper (PRSP) approach—as well as of the Bank’s Poverty Reduction Support Credit and the IMF’s Poverty Reduction Growth Facility—is that the budgets of low-income countries should become more pro-poor, public expenditure management is relevant to all PRSP countries, as it helps improve the tracking of poverty-reducing expenditure. It is for this reason that Bank and IMF staff encourage countries to incorporate into their PRSPs action plans to improve their PEM systems, mindful that country ownership is paramount for implementing remedial actions aimed at strengthening PEM capacity. A review of PRSPs and PRSP progress reports⁵ shows that PEM issues are being discussed in varying degrees.⁶

⁵ This review covered 13 of the 24 HIPCs that prepared a PRSP or PRSP Progress Report during 2002: Burkina Faso, Ethiopia, The Gambia, Guinea, Guyana, Malawi, Mauritania, Nicaragua, Niger, Rwanda, Senegal, Uganda, and Zambia.

⁶ PRSPs are increasingly incorporating PEM measures from the action plans such as reforming budget classification and accounting (Burkina Faso, Ethiopia, and Niger), implementing a medium-term expenditure framework (Guinea, Mauritania, and Uganda), strengthening expenditure control (Burkina Faso, The Gambia, and Niger), automating the budget system (Ethiopia, Malawi, Uganda, and Zambia), strengthening audit institutions (Mauritania, Rwanda, and Uganda), and instituting procurement regulations (Malawi and Uganda). In some PRSPs, PEM measures go beyond those included in the action plans. These include Malawi, The Gambia and Niger (detailed budget-reform matrix), Uganda (fiscal decentralization and introduction of results-oriented management to improve service delivery), and Guyana, Honduras, and Zambia (governance and anticorruption measures).

Ability to Measure

7. In 2004, the Bank and the IMF will jointly undertake a comprehensive review of the capacity of HIPCs to track poverty-reducing spending. The review will assess country PEM performance against the 15 benchmarks, and it will provide an opportunity to determine whether and how further updates should be conducted. PEM benchmarking originated in a HIPC context, which means that a relatively weak starting-point is to be expected. The Bank is now applying the benchmarks to non-HIPC IDA countries, which should reveal greater variation in PEM capacities. However, outcome monitoring will focus on the original baseline countries, using assessments in additional countries only to enrich the lessons learned.

8. In March 2003, Bank and IMF staff prepared a paper for their Executive Directors that indicated that countries are making progress in implementing the action plans⁷. More than three-fourths of measures in the action plans have been fully implemented or are under implementation. On the basis of measures that have been fully implemented, and assuming no slippage in other areas, staff expect that, on average, countries will have met one additional benchmark compared to the last comprehensive assessment. Progress is largely equal across budget formulation, execution, and reporting. Countries have been especially active in identifying and tagging poverty-reducing spending. An increasing number of countries are now able to report on poverty-reducing public spending, and such spending is rising in relation to GDP and total expenditures. These increases need to be accompanied by increased efficiency and better targeting to improve social outcomes. Measures from the action plans are being incorporated in PRSPs as well as in IMF-supported programs and Bank adjustment operations.

9. Pending the 2004 Bank-IMF review, staff continue to monitor closely overall PEM progress. For countries with a Bank adjustment operation or a IMF-supported program, relevant Board documents continue to report on progress in implementing actions to strengthen PEM capacity. Monitoring is also being carried out in the context of Public Expenditure Reviews (PERs), Country Financial Accountability Assessments (CFAAs), Country Procurement Assessment Reviews, and Joint Staff Assessments of PRSPs.

Reporting

10. In addition to the 24 HIPC countries covered in the 2002 Board paper, the Bank has undertaken assessments in 6 other HIPCs (Burundi, Central African Republic, Côte d'Ivoire, Democratic Republic of the Congo, Guinea-Bissau, and Sierra Leone). These assessments will be incorporated into the planned 2004 review. In addition, Bank staff extended this assessment to some non-HIPC IDA countries and middle-income countries. Such assessments are being carried out in several non-HIPC IDA countries, including Cambodia, Kenya, Lesotho, Nigeria, and Peru. Similar assessments have also been done for ten countries in Europe and Central Asia.

⁷ See *Update on Implementation of Action Plans to Strengthen Capacity of HIPCs to Track Poverty-Reducing Public Spending*, op. cit.

11. The PEM assessment tool used in HIPCs is being incorporated into other Bank instruments.⁸ HIPC expenditure tracking assessment missions have generally been incorporated into ongoing country work, such as PERs, CFAAs, or supervision missions. Moreover, the CFAA guidelines are being revised to incorporate the PEM assessment tool. This tool could also form the basis of a PEM performance monitoring module in country diagnostic work. Ultimately, the goal is for a country's own public expenditure oversight and audit bodies to conduct a review of and report on PEM performance.

Plans for Improvement

12. Bank and Fund staff are working in collaboration with others to improve the assessment tool⁹ and to provide further guidance to staff and country authorities on its application. The Bank recognizes that public expenditure management is not a comprehensive indicator of all public expenditure issues. Therefore, as part of a general effort to make the evaluation of public expenditure management more comprehensive, it is participating in work to develop a broader set of indicators that may add 10-15 benchmark measures, including revenue mobilization and procurement.¹⁰ At the same time, for the broad measurement of the quality of governance the Bank proposes a combination of objective data, expert assessments, and surveys, because it deems any one indicator insufficient to cover all dimensions of governance. Hence, to assess progress in governance associated with Bank-supported operations, the Bank is compiling a set of governance progress indicators.¹¹ Until these indicators have been more fully developed, the best available measure of governance is the indicator of public expenditure management that is now being used.

⁸ See *Bank-Fund Collaboration on Public Expenditure Issues* (IDA/SEC2003-0077), February 20, 2003.

⁹ The HIPC expenditure tracking assessment instrument is finding a broader use. The U.S. Treasury Office of Technical Assistance has used the results of the two Board papers to target technical assistance in Africa. The United Kingdom's Department for International Development has adopted the instrument, with additional benchmarks on procurement, as a fiduciary tool to review risks in providing aid. See "Managing Fiduciary Risk When Providing Direct Budget Support," Issues Paper, DFID, March 2002.

¹⁰ This work is being led by the Bank's Poverty Reduction and Economic Management network (PREM), Financial Management and Procurement Offices, and the IMF's Fiscal Affairs Division, in collaboration with international partners, supported by the Public Expenditure and Financial Accountability program secretariat in the Bank.

¹¹ The Public Sector Anchor in the PREM network in the Bank is working on formulating governance progress indicators that would enable operational staff and their clients to monitor improvements in governance that are logically associated with Bank-supported governance operations (programs, investments, or analytical and advisory services) and would go well beyond issues of public expenditure management. It is intended that governance progress indicators would measure intermediate outcomes and processes in public sector governance. Three areas relevant to governance are being considered: (a) public financial management and accountability, (b) public administration reform, and (c) institutional checks and balances. It will be at least two years before a comprehensive governance indicator becomes operational.

TIME AND FORMAL COST FOR BUSINESS REGISTRATION

Definition and Rationale

1. The Private Sector Development Vice Presidency gathers time and cost of business registration data as part of the Doing Business Project, by tracking the process for a standardized hypothetical company to complete the necessary regulatory requirements to formally register a business.
2. Formal cost of business start-up (registration and licensing procedures) measures the official payments required to fulfill the prerequisites for business registration, scaled as a percentage of gross national income (GNI) per capita. The cost of registration is a major barrier to entry in poor countries, deterring participation in the formal economy.
3. Time required for business start-up (registration and licensing procedures) measures the calendar days for a firm to obtain the necessary permits, and to notify and file with all requisite authorities to legally operate a business. Delays in registration are a major impediment to formal entry of private firms. Delay deters participation in the formal economy and increases the potential for corruption.
4. Both time and cost of entry are associated with poor economic outcomes, such as corruption and share of the informal sector in GDP. The two indicators do not, however, capture the same information. In many countries there is a distinct tradeoff: for example in Nepal, it takes only 25 days to register a business—the best performance among IDA countries—but the cost of registration, at 189 percent of GNI per capita, is amongst the worst of IDA countries. Both measures are required to obtain an accurate picture of barriers to entry.

Ability to Measure

5. As of September 2003, data are available for 133 countries, including 55 IDA countries, benchmarked to January 2003. Indicators will be updated annually during the Spring (e.g., the January 2004 data will be available in Spring of 2004).
6. The indicators are built up through a combination of desk research and expert assessment. The project team starts by studying the applicable laws and regulations, and by reviewing publicly available summaries and descriptions of the business registration process. A detailed list of the steps, time, and cost for business registration is compiled and sent to business registration experts (usually incorporation lawyers) in the country. They are asked to verify the data, identify any missing steps/data, and make any corrections. If there are differences in their answers, the project staffs go back to the respondents until the data can be reconciled.
7. To be comparable across countries, the indicators measure the time and cost for business start-up under specific assumptions about the company size, industry, legal

identity, and location, as well as the procedures followed. The data cover only the generic entry requirements and do not capture industry specific licenses or utility hookups. They cover only mandatory official procedures and costs, and therefore exclude voluntary procedures and delays as well as informal payments. Actual registration time and cost for individual firms may vary from the indicators.

Reporting

8. Data are updated annually. The Doing Business Project reports the indicators on a website, <http://rru.worldbank.org/doingbusiness>, and in its annual *Doing Business Report*.

Plans for Improvement

9. By end-2003, the sample will be expanded to 140 countries, including 58 IDA countries. Checks for regional variations in the indicators within countries may also be conducted in some countries. In addition, there are plans to expand the number of expert respondents in the assessment instrument, to ensure robustness of the results.

10. The Doing Business Project complements the business registration indicators with ten other sets of indicators on the regulatory environment for business. Other indicators being developed include business licensing and inspections and property titling.

PROPORTION OF RURAL POPULATION WITH ACCESS TO AN ALL-SEASON ROAD

1. Physical isolation is a strong contributor to poverty. Populations that do not have reliable access to social and economic services are poorer than those that do. The proposed indicator is the number of rural people who live within 2 kilometers, about 20 minutes walk, of an all-season road as a proportion of the total rural population.
2. Problems of access are particularly severe in rural areas that are distant from roads that regularly carry motorized transport services. It is estimated that about 700 million rural dwellers in developing countries (33 percent of total rural dwellers) are without reliable access to all-season roads. The large majority of them are poor.
3. An “all-season road” is a road that can be traveled by the prevailing means of rural transport (often a pick-up or a truck that does not have four-wheel-drive) all year round. Predictable interruptions of short duration during inclement weather (e.g., heavy rainfall) are permitted, particularly on low volume roads. Depending on the traffic volumes, well constructed earth roads are often going to be sufficient.

Ability to Measure

4. There are two main approaches to the measurement of this indicator: (a) household surveys that collect information about access to transport and, (b) mapping information to determine how many people live within the specified catchments of the road network.
5. Household surveys are the preferred approach. The majority of the available country indicators will be established using this method. These surveys are designed to produce high-quality data and be representative of the main household categories (thus, the main subgroup “rural population” will be adequately covered).
6. The household survey types drawn upon are Living Standard Measurement Survey, Household Budget Survey, Priority Survey and Household Expenditure Survey, which include relevant questions. Discussions are also underway with a view to including transport questions in other regular administrative surveys such as Demographic and Health Surveys and Multiple Indicator Cluster Survey. Examples of survey questions (with answers on distance and/or time) are: *“How far do you live from an all weather road?”*; *“How long does it take you to get to the closest transport stop?”*; *“How much time on average do members of your family take to get to the nearest public transport?”*
7. Updates of the indicator data will depend on the frequency of household surveys, but are expected to occur every three or four years.
8. The mapping approach involves laying a road network map over a map showing the distribution of the population, and then counting the rural population that lives within

(and beyond) the two-kilometer catchments of the all-season road network.¹ The method is not complex; most countries have the necessary base data. However, there are concerns about how often it is updated and by whom, and additional study is required to assess the quality and accuracy of the results. Subject to this caveat, the mapping measurement approach could also be used to check the accuracy and reliability of household survey results.

Reporting

9. Of the current IDA-eligible countries, some 40 are considered to offer good prospects for establishing the indicator in the medium term. Preliminary measures (based on the survey and the mapping approaches combined) have been calculated for 13 countries, and sources of the required data have been identified for another 17, most using household surveys, some using the mapping approach. Tests will be undertaken to ensure the comparability of the results. Thus, reliable indicators of rural access to an all-season road are expected to be established for at least 30 IDA eligible countries within the next 12 months.

Prospects and Plan for Improvement

10. As far as possible, the indicators will be calculated from country data sets that have already been collected and can be readily updated. Meanwhile, the Bank has taken steps to raise client awareness of the significance of the indicator, and encourage other countries to collect the necessary data, particularly through household surveys. The inclusion of a road access indicator in the 2004 edition of *World Development Indicators* also is being considered.

¹ Burkina Faso, for example, had 1:100,000 maps that identified the road network. Recent village-level population data were overlaid on the road maps. Regional engineers, responsible for about 10 percent of the network, confirmed which part of the network could be considered all-season. Data were collated in the Rural Transport Office of the Road Agency.

ELECTRIFICATION RATE

1. This note responds to the April 10, 2003 request of IDA Deputies to examine whether an energy indicator should be included in the IDA14 Results Measurement System.¹

2. The *electrification rate* (i.e., electricity access) appears to be a potentially viable indicator for IDA14 Results Measurement System. Moreover, with the anticipated expanded coverage of household surveys in IDA countries it may be possible to develop during IDA14 a more comprehensive indicator that measures, in a reasonable proportion of IDA countries, the proportion of people with an electricity connection in their home *who use modern energy as their main cooking fuel*. Whether this can be done will be known in Spring of 2004. At that point IDA Deputies could decide to adopt this more comprehensive indicator.

Definition and Rationale

3. It is proposed to use the International Energy Agency (IEA) definition of *electrification rate*: “the number of people with an electricity connection in their home as a percentage of total population.”² This definition is consistent with that of specialized surveys such as Demographic and Health Surveys (DHS) and the World Health Survey (WHS).

4. Available data sources will determine the method of calculation for a particular country. If the number of residential household customers is available from utility data, the population with electricity connection (the numerator) may be calculated by applying estimates of household size based on census data. To this should be added (if available) estimates of the number of households (and the population they represent) who have an electricity connection but are not utility customers. Total population (the denominator) is from census data. Household surveys may provide better estimates of the indicator if, like the core household questionnaire of the DHS, they ask, “*does your household have electricity?*”

5. The International Energy Agency estimates that in 2000, 1.7 billion people in developing countries (or about 27 percent of the world’s population) lacked an electricity connection.³ Electrification rates, for the IDA countries covered in the IEA and DHS datasets, ranged from 2 percent (Afghanistan) to 76 percent (Vietnam). The electrification rate for the 51 countries taken as a group was 38 percent, representing about 0.9 billion people with and about 1.5 billion people without an electricity connection.

Note: This annex was prepared by Kyran O’Sullivan and Masami Kojima.

¹ Progress toward Millennium Development Goal No. 7 (*ensure environmental sustainability*) is measured by an agreed Millennium Development Indicator (*the proportion of population using solid fuels*). The World Health Organization (WHO) is responsible for monitoring this indicator.

² *World Energy Outlook*, International Energy Agency, 2002.

³ *World Energy Outlook*, op. cit.

6. Household electricity consumption has been shown to have multiple benefits, including improved returns on education and wage income, improved productivity of home business, and fungible time savings (for example, from household chores to childcare).⁴ In the absence of household electricity, there are adverse health effects, particularly on women and children, arising from exposure to smoke from the combustion of biomass and other solid fuels in traditional stoves.⁵ There are established links between such exposure and acute respiratory infections in children and chronic bronchitis and pulmonary disease in adults, and there is emerging evidence that links such exposure to perinatal mortality, asthma in children, and tuberculosis and lung, nasopharyngeal, and laryngeal cancers in adults. These impacts have led the World Health Organization (WHO) to cite such exposure as one of greatest environmental health risks.⁶ Moreover, the efficiency of the three-stone fire traditionally used in many developing countries is only about 10-15 percent; thus most of the energy content of the fuel is wasted.

Ability to Measure

7. Available data sources will determine the method of calculation for a particular country. If the number of residential household customers is available from utility data, the population with electricity connection (the numerator) may be calculated by applying estimates of household size based on census data. Total population (the denominator) is from census data. Household surveys (either multitopic surveys such as Living Standard Measurement Survey (LSMS) or specialized ones such as the DHS, WHS, and specialized energy surveys) that are nationally representative provide better estimates of the indicator if, like the core household questionnaire of the DHS, they ask, “*does your household have electricity?*” This is because they capture electricity use in households that are not customers of electricity utility companies, including (a) households who share the same connection to the network with a utility customer; (b) households supplied by community or co-operative mini-grids and (c) households that obtain electricity service through unauthorized connections.⁷ Because nationally representative household surveys provide more accurate estimates of the electrification rate, and cross-country comparability of the indicator is desirable, administrative (electricity utility) data should only be used when it takes account of consumers who are not utility customers or when there is good reason to believe that such consumers are a very small fraction of the electrified population.

⁴ See *Rural Electrification and Development in the Philippines: Measuring the Social and Economic Benefits*, ESMAP, 2002; and *Infrastructure & Poverty Linkages. A Literature Review*. Brenneman & Kerf, World Bank processed, 2002

⁵ von Schirnding, Y., N. Bruce, K. Smith, G. Ballard-Tremeer, M. Ezzati, and K. Lvovsky. 2001. “Addressing the Impact of Household Energy and Indoor Air Pollution on the Health of the Poor – Implications for Policy Action and Intervention Measures” prepared for Working Group 5 (Improving the Health Outcomes of the Poor), Commission on Macroeconomics and Health.

⁶ *The World Health Report 2002*, WHO, 2002, available at <http://www.who.int/who/2002/en/>.

⁷ For a fuller discussion of quality issues for data from general-purpose household surveys see Komives, Whittington, and Wu, *Infrastructure Coverage and the Poor; A Global Perspective*, Policy Research Working Paper 2551, World Bank, 2001.

8. In theory the indicator can be produced annually for individual countries, with a two-year reporting lag; however, for most countries a three-year reporting period would suffice to discern significant change.

9. The most comprehensive available database of electrification rates was compiled by the IEA in 2002. Using a variety of sources—utility data, household surveys, and expert estimates—it covered electrification rates in 2000 for 81 countries, including 40 IDA countries (see Appendix E1). Data for a further 11 IDA countries are available from DHS. Data that are potentially available for additional IDA countries from completed LSMS, have not yet been collated.

Reporting

10. Since 1997, the core Household Questionnaire of the DHS surveys have asked, “*does your household have electricity?*” In 2002, WHO’s WHS asked the same question. Over 70 countries (including 55 developing countries) participated in the 2002 WHS survey, and there are plans to extend the survey in future years to more countries. Other household surveys, such as the LSMS, other specialized surveys, such as Integrated Surveys in Sub-Saharan Africa, and national surveys, such as India’s National Sample Survey, are also possible sources for the indicator. The annual energy questionnaire of the UN Statistical Division (UNSD) that is sent to national statistical offices, ministries of energy, or other authorities responsible for energy statistics is another survey that could collect data for the indicator (at present it does not contain a relevant question).

Plans for Improvement

11. The World Bank Development Data Group (DECDG) is committed to monitoring this indicator in the future. DECDG intends to establish a work program, with the assistance of the Energy Unit, with the objective of extending the available data, in collaboration with the IEA and UN agencies such as UNSD and WHO. DECDG anticipates that data on electrification rates for at least half of the IDA countries would be available as a baseline for 2002 or 2003 at the beginning of IDA14, with a subsequent update for 2005 or 2006 for most IDA countries before the end of IDA14.

12. Given the importance of household use of clean cooking fuels, work should continue with countries and partners to develop a comprehensive indicator of modern energy use by households. The surveys cited above that capture electricity connection are possible sources of data on energy use for cooking and heating, and from which the comprehensive indicator could be calculated. As noted, by Spring of 2004 we should be able to determine the possibility of developing during IDA14 an indicator that measures, in a reasonable proportion of IDA countries, the proportion of people with an electricity connection in their home *who use modern energy as their main cooking fuel*.

Appendix E1

Electrification Rate in 2000¹

	Electrification rate %	Population without electricity million	Population with electricity million		Electrification rate %	Population without electricity million	Population with electricity million
Africa				South Asia			
Angola	12.0	11.5	1.6	Afghanistan	2.0	25.4	0.5
Benin	22.0	4.9	1.4	Bangladesh	20.4	104.4	26.7
Burkina Faso	13.0	10.4	1.6	Bhutan	n.a.	n.a.	n.a.
Burundi	n.a.	n.a.	n.a.	India	43.0	579.1	436.8
Cameroon	20.0	11.9	3.0	Maldives	n.a.	n.a.	n.a.
Cape Verde	n.a.	n.a.	n.a.	Nepal	15.4	19.5	3.5
Central African Rep.*	3.0	3.7	0.1	Pakistan	52.9	65.0	73.1
Chad*	2.3	7.7	0.2	Sri Lanka	62.0	7.4	12.0
Comoros*	28.9	0.4	0.2				
Congo DR	6.7	47.5	3.4	E. Europe and Central Asia			
Congo, Republic of	20.9	2.4	0.6	Albania	n.a.	n.a.	n.a.
Cote d'Ivoire	50.0	8.0	8.0	Armenia*	98.9	0.0	3.8
Eritrea	17.0	3.4	0.7	Azerbaijan	n.a.	n.a.	n.a.
Ethiopia	4.7	61.3	3.0	Bosnia-Herzegovina	n.a.	n.a.	n.a.
Gambia, The	n.a.	n.a.	n.a.	Georgia	n.a.	n.a.	n.a.
Ghana	45.0	10.6	8.7	Kosovo	n.a.	n.a.	n.a.
Guinea*	16.4	6.4	1.2	Kyrgyz Republic*	99.8	0.0	5.0
Guinea-Bissau	n.a.	n.a.	n.a.	Moldova	n.a.	n.a.	n.a.
Kenya	7.9	27.7	2.4	Tajikistan	n.a.	n.a.	n.a.
Lesotho	5.0	2.0	0.1	Uzbekistan*	99.6	0.1	25.0
Liberia	n.a.	n.a.	n.a.	Yugoslavia	n.a.	n.a.	n.a.
Madagascar	8.0	14.3	1.2				
Malawi	5.0	9.9	0.5	Middle East & N. Africa			
Mali*	6.2	10.4	0.7	Djibouti	n.a.	n.a.	n.a.
Mauritania*	22.2	2.1	0.6	Yemen, Republic	39.2	6.7	10.8
Mozambique	7.2	16.4	1.3				
Niger*	6.7	10.3	0.8	L. America & Caribbean			
Nigeria	40.0	76.1	50.8	Bolivia	60.4	3.3	5.0
Rwanda*	6.2	8.2	0.5	Dominica	66.8	2.8	5.6
Sao Tome & Principe	n.a.	n.a.	n.a.	Grenada	n.a.	n.a.	n.a.
Senegal	30.1	6.6	2.9	Guyana	n.a.	n.a.	n.a.
Sierra Leone	n.a.	n.a.	n.a.	Haiti	34.0	5.3	2.7
Somalia	n.a.	n.a.	n.a.	Honduras	54.5	2.9	3.5
Sudan	30.0	21.8	9.3	Nicaragua	48.0	2.7	2.4
Tanzania	10.5	30.2	3.5	St. Lucia	n.a.	n.a.	n.a.
Togo	9.0	4.1	0.4	St. Vincent	n.a.	n.a.	n.a.
Uganda	3.7	22.5	0.9				
Zambia	12.0	8.9	1.2				
Zimbabwe	39.7	7.6	5.0				
East Asia							
Cambodia	15.8	10.3	1.9				
Indonesia	53.4	98.0	112.4				
Kiribati	n.a.	n.a.	n.a.				
Lao PDR	n.a.	n.a.	n.a.				
Papua New Guinea	n.a.	n.a.	n.a.				
Mongolia	90.0	0.3	2.4				
Myanmar	5.0	45.3	2.4				
Samoa	n.a.	n.a.	n.a.				
Solomon Islands	n.a.	n.a.	n.a.				
Timor-Leste	n.a.	n.a.	n.a.				
Tonga	n.a.	n.a.	n.a.				
Vanuatu	n.a.	n.a.	n.a.				
Vietnam	75.8	19.0	59.5				

¹ Source: International Energy Agency, World Energy Outlook, 2002 except for countries marked * when source is DHS. IEA data are for 2000.

* Demographic & Health Surveys; CAR 94/95, Chad 96/97, Comoros '96, Guinea '99, Mali '01, Mauritania 00/01, Niger '98, Rwanda '00, Kyrgyz '97, Uzbekistan '96.

n.a. not available in the IEA published database in World Energy Outlook 2002 or from the StatCompiler on the MeasureDHS website .

CHANGE IN INCOME INEQUALITY

Definition and Rationale

1. Strictly speaking, changes in social equity are achieved when increases in income, or any other indicator of welfare, are impartially distributed such that the share each individual receives conveys the same social welfare across the full spectrum of individuals. It is therefore not easy to evaluate the extent to which growth is pro-poor or to capture changes in social equity without detailed information about changes in the welfare of different individuals or groups of individuals.
2. One suggestion for measuring social equity is to track changes in inequality using the mean logarithmic deviation (MLD) measure. Basically this measure is the difference between the growth rate of mean per capita income (or expenditures) for all IDA countries and the mean of the growth rates of per capita income (or expenditures) for all percentiles in the distribution of IDA countries. This measure is known to have a number of desirable theoretical properties. Although this measure has been less popular than others (notably the famous Gini index), it can be shown that MLD is the *only* decomposable index that satisfies standard properties.¹

Ability to Measure

3. It will be possible to calculate average growth rates in per capita incomes/expenditures on a purchasing power parity basis for the income/expenditure percentile IDA countries for periods during the implementation of IDA14. There are, however, some limitations on the period for which the indicator can be calculated because estimates of incomes on a purchasing power parity basis (which makes incomes between countries comparable) are put together only every three years.

Reporting

4. Baseline data for 2002 would be available at the start of IDA14 and growth rates could be estimated every three years thereafter as new data become available. Bank Management will be responsible for the preparation of the regular three-yearly estimation of this indicator. It is proposed to calculate MLD side-by-side with the current regular monitoring of poverty (using the \$1/day and \$2/day lines for absolute poverty and the new relative poverty measure²). These data would probably be published for all countries for which data are available in the annual *World Development Indicators*, where Regional comparisons could also be made. The measure could also be used, as appropriate, as part of the analysis of poverty in the *Global Economic Projections* published annually by the World Bank.

Note: This annex was prepared by Martin Ravallion

¹ More precisely, MLD is the only additively decomposable measure that is smooth (differentiable in all incomes), symmetric, homogeneous of degree zero in all incomes, and satisfies the standard transfer principle; see Francois Bourguignon, "Decomposable Inequality Measures," *Econometrica*, 47(July 1979): 901-920.

² Using the methods documented in Shaohua Chen and Martin Ravallion, "How Did the World's Poor Fare in the 1990s?" *Review of Income and Wealth*, Vol.47(3), September 2001, pp.283-300.

Technical Note on the Derivation of the Mean Logarithmic Deviation

5. To explain this measure, it is convenient to start first with the *growth incidence curve*.³ Let $F_{it}(y)$ denote the cumulative distribution function of income (or expenditure) for country i at date t , giving the proportion of the population of i with income less than y at date t . Inverting the cumulative distribution function at the p 'th percentile gives the income of that percentile:

$$y_t(p) = F_t^{-1}(p) = L'_t(p)\mu_t \quad (y'_t(p) > 0) \quad (1)$$

(dropping country subscripts for now) where $L_t(p)$ is the Lorenz curve (with slope $L'_t(p)$) and μ_t is the mean; for example, $y_t(0.5)$ is the median. Letting p vary from zero to one yields the "percentile function."

6. Comparing two dates, $t-1$ and t , the growth rate in income of the p 'th quantile is $g_t(p) = [y_t(p)/y_{t-1}(p)] - 1$. Letting p vary from zero to one, $g_t(p)$ traces out the growth incidence curve. It follows from (1) that:

$$g_t(p) = \frac{L'_t(p)}{L'_{t-1}(p)}(\gamma_t + 1) - 1 \quad (2)$$

where $\gamma_t = (\mu_t / \mu_{t-1}) - 1$ is the growth rate in μ_t . It is evident from (2) that if the Lorenz curve does not change then $g_t(p) = \gamma_t$ for all p . Also $g_t(p) > \gamma_t$ if and only if $y_t(p)/\mu_t$ is increasing over time. If $g_t(p)$ is a decreasing (increasing) function for all p then inequality falls (rises) over time for all inequality measures satisfying the Pigou-Dalton transfer principle.

The mean log deviation can be written:

$$I_t = \ln \mu_t - \int_0^1 \ln y_t(p) dp = - \int_0^1 \ln L'_t(p) dp \quad (3)$$

Note that the index can also be written in discrete form for a sample $i=1, \dots, n$ as:

$$L_t = \ln \mu_t - \sum_{i=1}^n w_{it} \ln(y_{it})$$

where the i 'th sampled household at date t has weight w_{it} .

³ See Martin Ravallion and Shaohua Chen, "Measuring Pro-Poor Growth," *Economics Letters* 78(2003): 93-99.

7. Taking the first difference in the measure in (3) between two successive dates we then have:

$$\Delta I_t = \Delta \ln \mu_t - \int_0^1 \Delta \ln y_t(p) dp \approx \gamma_t - \int_0^1 g_t(p) dp \quad (4)$$

In other words, the difference between the growth rate in the mean and the mean growth rate indicates the change in inequality.

8. An attractive feature of this approach is that MLD is additively decomposable, meaning that it can be written as the population weighted sum of within country inequality and between country inequality. Thus we can write aggregate inequality across m countries in the form:

$$I_t = \sum_{i=1}^m w_{it} I_{it} + I_t^B \quad (5)$$

where w_{it} is the population share of country i at date t and

$$I_t^B = \ln \mu_t - \sum_{i=1}^m w_{it} \ln \mu_{it} \quad (6)$$

is the between-country component of total inequality.