INTEGRATED HOUSEHOLD LIVING CONDITIONS SURVEY IN MYANMAR
(2009-2010)

QUALITY REPORT

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Quality Report

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FOREWORD

The Integrated Household Living Conditions Assessment (IHLCA) project provides the Government of the Republic of the Union of Myanmar, the UN and other national and international stakeholders with statistical data for determining living conditions in the country. The first nation-wide survey was carried out in 2004-2005. This second survey, in addition to providing the most recent state of living conditions and poverty levels, also provides opportunities to make comparisons and trend analysis for contributing to well-informed, pro-poor decision making.

The overall survey design of the IHLCA-II was chosen to mirror the IHLCA-I, in order to secure comparability. For this reason almost half of the number of interviewed households was the same households as in 2004-2005, allowing for poverty dynamics analysis. The survey included a nationwide representative sample of 18,660 households. As in the first survey, all of the field work was divided into two rounds; the first round took place between December 2009 and January 2010 (after the harvest) and the second round from May 2010 onwards (before the harvest).

The survey has been undertaken in close cooperation with the Planning Department of the Ministry of National Planning and Economic Development (MNPED), the United Nations Children's Fund (UNICEF) and the Swedish International Development Cooperation Agency (Sida). The survey methodology and process follows international control standards and the project team has received extensive technical oversight and support from organizations such as the World Bank and Statistic Sweden, as well as from technical staff from UNICEF and UNDP. These partners have also monitored the survey process from design and methodology to data analysis.

Being one of the most comprehensive surveys on living conditions and poverty undertaken in Myanmar we trust that this statistical data will be useful and valuable for various purposes and a variety of stakeholders, and it is our hope that this will lead to well-informed planning and decision making and subsequent improvements in the well-being of the Myanmar population.

Bishow Parajuli

Resident Representative UNDP Myanmar

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Additional contributions were made by the National Nutrition Center, the Department of Health Planning, the Yangon Institute of Economics, the Education Planning and Training Department, the Department of Labor, the Department of Agricultural Planning, the Settlements and Land Records Department, and the Department of Population.

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1. Introduction

The European Statistical System (ESS) standard for Quality Reports distinguishes between six types of statistical processes. For the purpose of the present report the *sample survey process* is selected[1].

Furthermore the standard is organised along the lines of the quality principles in the ESS Code of Practice[2]. There are 11 sections from which here a subset is chosen. This subset describes the 6 basic quality principles or quality dimensions: Relevance; Accuracy; Timeliness/Punctuality; Accessibility/ Clarity; Comparability; Coherence. The principles are detailed in ANNEX 1.

The report also includes some conclusions regarding principal quality problems, recommendations for improvements, and follow-up action items.

Statistical agencies often use slightly different sets of quality dimensions or similar frameworks when describing quality statistics. In our context we will stay with the ESS criteria in describing the quality of IHLCA-II outputs.

But in order to understand *survey* quality in its setting it is important to see quality in a broader perspective. To this extent an introduction to Quality Management with references is provided in the following chapter.

[1] The other processes are: Census; Statistical process using administrative source(-s); Statistical process involving multiple data sources; Price or other economic index process; Statistical compilation

[2] http://epp.eurostat.ec.europa.eu/portal/page/portal/quality/code_of_practice

2. Quality Management

2.1 Quality Management. A tool for change

Quality Management (QM) aims at improving overall performance of an organization. QM is a generic concept and different frameworks have been developed for QM implementation. In ANNEX 3 a number of such frameworks are described. Commonly used in Europe is the EFQM[3] Excellence Model.

QM addresses leadership, policy and strategy, people, partnerships and resources, and processes. It is a concept that delivers the basis for appropriate measures aiming at quality improvements. Since QM models are widely used QM can serve as a benchmark option when comparing performance of the organization with other similar.

For a *statistical* agency QM in specific comprise methods to enhance the quality of the statistics that are produced and disseminated. QM presents tools to assess all aspects of the production process; not only the products themselves but all infrastructure that must be at hand for the production e.g. management, staff etc.

2.2 Why QM does not apply to IHLCA-II

It is of course possible to apply QM to the environment conditions for a *single product*, e.g. an income survey or the production of the consumer price index. But this should be done prior to its undertaking. For our specific case of the IHLCA set of surveys, IHLCA-I and IHLCA-II have already been carried out even if reporting and dissemination still remains for the latter. This implies that implementing a QM scheme is not relevant.

Yet for household surveys to come QM may be introduced (e.g. using EFQM, Six Sigma[4]) and mechanisms can be built-in to secure what is produced and present opportunities for improvement.

2.3 Status

By February 2011 most of project activities have already been completed: setting up the survey organisation, survey design, recruiting and training field workers, survey data processing and editing. The three main reports, i.e. the Poverty Report, the MDG Data Report, and the Poverty Dynamics Report are written. What do remain are final government approval of the report, further thematic analysis, and dissemination.

The criteria that are used to determine and state the IHLCA-II survey quality are the common quality principles for survey quality as defined by the ESS standard for Quality Reports5.IHLCA-II Quality.

[3] European Foundation for Quality Management. http://www.efqm.org/en/tabid/132/default.aspx
[4] http://www.sixsigmaonline.org/index.html
[5] ESS Handbook for Quality Reports. Eurostat 2009. http://unstats.un.org/unsd/dnss/docs-nqaf/Eurostat-EHQR_FINAL.pdf
ESS Standard for Quality Reports. Eurostat (2009). http://epp.eurostat.ec.europa.eu/portal/page/portal/ver-1/quality/documents/ESQR_FINAL.pdf

3. Report

The IHLCA-II survey quality will be discussed using the definitions defined by the ESS in its *Quality Principles*. For each of these principles the background will be given, an assessment made, and quality conclusions drawn.

3.1 Content/Relevance

In order to address this topic it is necessary to understand the reasons for undertaking the survey. They are formulated in the project document:

- The need to support the Government of Myanmar in its efforts to achieve the Millennium Development Goals (MDGs) and to provide the necessary data and analysis to monitor progress made in achieving the MDGs; to provide information for the (National) Human Development Reports;
- The need to support the articulation of a comprehensive poverty reduction plan in Myanmar;
- To improve information on household living conditions and prepare a poverty profile on which to base the design of pro-poor economic and social policies:
- To help orient development programmes and projects for maximum poverty reduction:
- To monitor changes in poverty incidence over time.

It is to this background the content and relevance of the survey must be measured. To which extent does the survey vehicle meet the needs?

Now what are the possible errors that may have been induced in the process? There may be errors in basic concepts, definitions, and classification; and errors in putting them into practice (questionnaire design, interviewers training and instructions).

In order to balance survey scope and objectives with the survey design (sampling and questionnaires) a thorough Qualitative Study was undertaken prior to IHLCA-I. The main study results provided information on what indicators should have priority to be included in the questionnaires to meet the survey objectives. This in turn implies that the final questionnaires were well designed, with the right content and with relevant indicators.

The IHLCA-II survey mirrors the previous IHLCA-I with minor adjustments. Questions that were not easily answered were made more clear and additional questions were added. These changes to the questionnaires do not adversely affect the comparability between the two surveys, and allow for calculation of more MDG indicators in the IHLCA-II than had been possible with the previous survey. These kinds of changes were also entirely in keeping with international standards.

The overall conclusion is that IHLCA-II meets the user needs, is relevant and complete with regard to the survey objectives and scope.

3.2 Accuracy

To what extent statistics produced are accurate (and reliable) depends on two components, *sampling error* and *non-sampling errors*.

Sampling error

The sampling error is derived from the survey design. Statistics should if possible be presented as estimates with confidence intervals. The width of the confidence interval will advise on how estimates could be interpreted – the ratio between the interval and the estimate, or the ratio between the standard deviation and the estimate (variation coefficient) are normally used for this purpose.

In the survey output tables, point estimates are given, e.g. the average or the total for a cross-section of administrative classifications and (relevant) indicators. This table cell estimates are accompanied by the *standard error* (SE) which is the square root of the *variance*. The point estimate +- 2*SE will give an approximate 95% confidence interval around the estimate. The confidence interval should be interpreted as *the probability that the interval covers the true value of the indicator*.

Prior to the sampling scheme was designed, studies of variances were undertaken. It was realized that in order to provide acceptable estimates on township or district levels the sample would have to be too large to handle. It was therefore decided that the IHLCA survey(-s) should provide good quality estimates for the main survey variables at the national level. Estimates of lower quality were to be provided for the 17 States/Regions comprising of the country. The relative amplitude of sampling error in comparison with other types of survey errors increases as we move from estimates for the total population (the nation) to estimates for individual subgroups (the States/Regions).

The 2004 - 2005 IHLCA used a two-stage stratified cluster sample design. All estimates produced are therefore subject to sampling errors.
The method used to compute sampling errors in the 2004 - 2005 IHLCA, is based on the comparison among estimates for independent primary selections within each stratum. The basic assumptions made were:

- The sample selection is independent between strata;
- These primary selections are drawn at random, independently and with replacement.

The term 'primary selection' refers to a PSU and stratum refers to either the rural/small-urban distinction or a region.

Given independent with replacement sampling of clusters, sampling theory can be used to estimate the variance of stratum totals, means, and ratios for survey variables.

The formulae used in the computation of sampling errors for the 2004 - 2005 IHLCA are detailed in the Technical Report[6].

> Example
>
> To illustrate these concepts, the total number of households in Myanmar for both urban and rural areas had been estimated as 7,455,075. The standard error on this estimate had been computed as 199,586. Then the following statement holds:
>
> We can be approximately 95 percent confident that the actual (unknown) number of households is in the range 7,455,075 ±2 * 199,586; i.e. between 7,255,489 and 7,654,661.

[6] IHLCA-II. Technical Report. UNDP 2011.

In general, the precision levels achieved at the *national level* are good and acceptable, quite in line with the expectations of the survey planning team. In relation with standard errors, both rounds are quite similar in terms of quality. The same is true for survey results which are quite consistent between the two rounds.

Even at *state/region* levels the confidence intervals are mostly acceptable. To make the uncertainty dimensionless *coefficient of variations* (CV) may be calculated. They are simply expressed as the standard error divided by the mean. The CVs of different indicator estimates can then be compared even if the estimates themselves vary in absolute size.

The findings of the Mid-Term Evaluation were that the tests of sampling errors in estimates proved satisfactory[7].

The overall conclusion is that the IHLCA-II sampling design is appropriate and that precision of estimates is acceptable at both national and state/region levels.

Non-sampling errors

The effects of non-sampling errors are often difficult to grip. Non-sampling errors come in various forms and importance that are described in the following.

Coverage errors

The sampling frame is the list of wards and village tracts in the selected townships with the estimated number of households. It was provided by the Department of Population.

Some areas were excluded from IHLCA-I due to inaccessibility[8]. The estimated number of households in the excluded areas represented an estimated number of 343,130 households with a total estimated population of 1,787,708 (5% of the total population). Some of these were accessible for IHLCA-II but it was not documented. There were also areas which were included in the sample for IHLCA-II but became inaccessible due to *Nargis*. These areas (11 villages in *Laputta* and *Bogalay* townships) were replaced by comparable villages in the village tract or neighboring village tract.

The bigger question - what effect Nargis has had on population changes and changes in living conditions - cannot be answered directly by data from the survey. However, while selecting a partially new sample of households for IHLCA-II (50% overlap design), households migrating from the area hit by Nargis had a chance of being included in the sample.

The boundaries of the several sampled units did change after the sample was drawn in 2004. The general principle was to use the units as they were in 2004 as far as possible. If the sampled village had been split into two villages both villages were considered as the sampled unit, trying to keep the same area as in 2004. If the sampled village had been merged with another village only the part of the new village was considered that covers the area of the old village as the sampled unit.

One very important aspect during the listing of the households living in remote isolated and hardly accessible villages was the identification of the proper boundaries. It was noticed that some of the maps and the other available cartographic material, did not convey enough reliable information to allow the supervisors and enumerators to precisely identify and list the households. In some hilly regions of the country, experience has proved the extreme difficulty to access different villages scattered over wide open spaces. Consequently, a number of households and or localities might have been omitted during the

[7] Mid-Term Evaluation of the IHLCA. Main Report – Final. January 2009. UNDP.
[8] An estimated population and number of households left of IHLCA-I is attached in the Annex 2 (Table 2)

listing exercises. This partly explains the differences observed in terms of number of households as given by the IHLCA supervisors and the listing provided by PD.

Altogether the estimated number of households in the excluded 45 townships and from other wards/village tracts represented an estimated number of 343,130 households with a total estimated population of 1,787,708 that was left out of the IHLCA-I survey.

It is in this category that one finds all kinds of inaccessible, not-at-home and refusals.

Out of 129 sampled townships originally selected for the sample, 3 were dropped for security reasons; those 3 were the two Lauk Kai townships and the one Maing Ton township that is mentioned earlier.

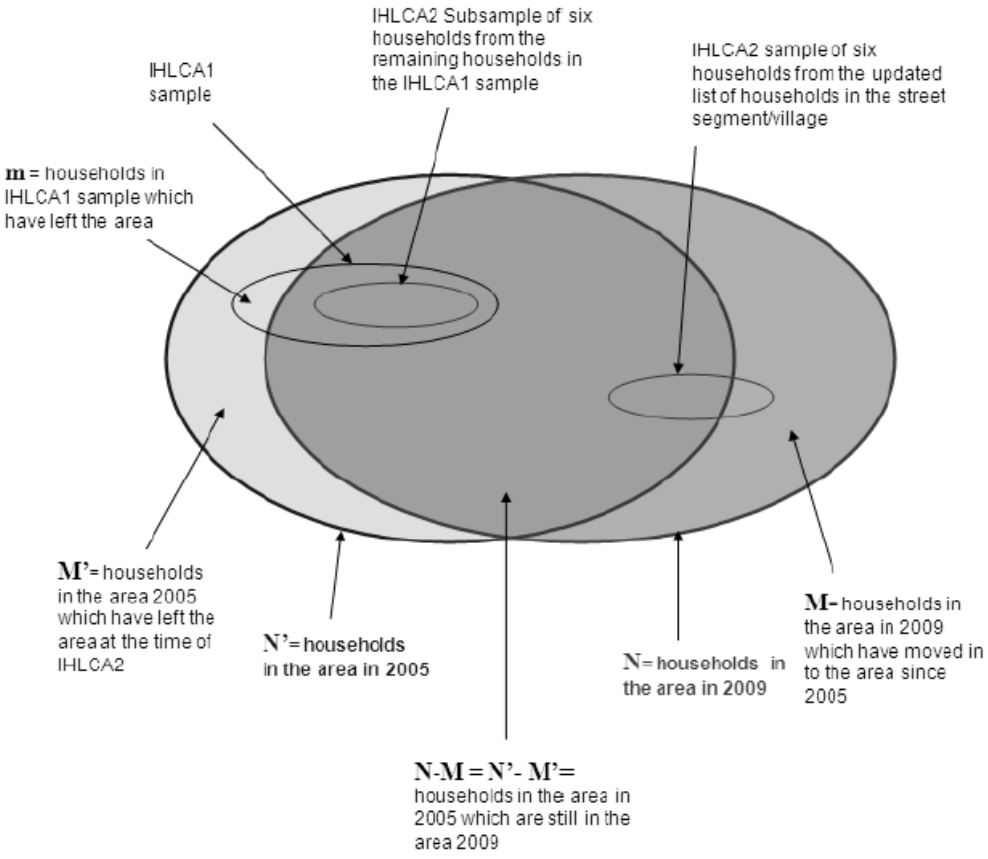
In Round II, 25 households that were interviewed during Round I had moved and therefore were no longer available (out of a total of 18660 households in Round I).

The problem was dealt with in the analysis step by adjusting the weights of the remaining households of the strata to which they belonged for both rounds.

In addition, the frame that was provided to the survey planning team had some imperfections; a number of wards/village tracts had no households and population numbers and the PD also decided to exclude a number of townships for security and accessibility reasons.

The number of households in the excluded townships refers to the number of households in the 45 townships dropped by the Planning department for security and accessibility reasons. The wards and village tracts for which no household or population figures were available were dropped.

The figure below illustrates the situation when combining both IHLCA surveys:



The overall conclusion is that the IHLCA-II sampling design dealt with coverage errors in the best possible way taken the difficulties into account. Effects were further reduced by adjusting weights when appropriate.

Measurement errors

Measurement errors occur in the interaction between respondent and interviewer. The challenge for the interviewer is to convey the "true" survey objectives and meaning of questions and answers. Thus, the training stage of field-workers is of utmost importance.

Measurement errors can basically be grouped into *Respondent errors* and *Interviewer errors*.

1. Respondent errors

   The IHLCA surveys are using the *recall method* for registering household activities. The recall method often results in an undercount of consumption for the simple reason that households cannot remember with accuracy consumption or expenditure as required by the method. There is also a clear risk for memory lapses and event omissions or displacement. The literature indicates that recall error is less if the households are confronted with a detailed list of consumption and expenditure items than if a more summary list of groups of consumption items is used. This is the case in the IHLCA surveys and a way of mitigating the problem. It was also emphasized during enumerator training how the household may or may not be probed.

   Respondent fatigue is another danger when using long questionnaires. Excessive details in the list of consumption items make the interview into a tedious exercise for both households and interviewers. A 99.7 percent response rate at the household level is reported for the IHLCA-II survey in spite of the challenge to both households and interviewers that the long complex interview represented. In the training enumerators were well informed and how to behave during the interviews.

2. Interviewer errors

   Interviewer errors occur from various reasons. If the questionnaires and manuals are ambiguous it will result in erroneous interpretation. If the manuals are not correctly understood the same will happen. Adjustments of the manuals have been made in connection with the training. As example some of the supervisors did not grasp well the concept of consumption from home production. As a consequence a number of households reported their total production instead of the quantity of food item consumed from home production, resulting in very high levels of consumption. This aspect was later taken into account when correcting for outliers.

Experiences from IHLCA-I were used in order to adjust or amend the questionnaires for IHLCA-II. The actions to correct errors were if possible taken immediately during the interview. If not then editing was done directly after the interview or during review by the supervisor. Finally errors were handled during data processing since there were built-in triggers in the data entry program.

Non-response errors

These errors come from two sources. The first is when a household refuses to participate or that selected households are not at home. In the IHLCA-II survey there were 51 households in this category.

The second relates to households from some reasons not answering specific questions. This was the case with Module 9 in specific. This module includes questions on Finance and Savings that commonly are perceived as sensitive personal information. Information obtained through Module 9 is still considered pertinent and most households answered the questions included in the module. As for any household

survey respondent answers should be accepted since there are no means available to decide whether or not the respondent told the truth.

In general, during the survey operations, transport/communication problems might have had an impact on non-sampling errors which cannot be estimated precisely. However the extent of those errors was limited by several field visits of Technical Unit as well as by the Survey Management Team at the field level.

The overall conclusion is that the IHLCA-II estimation procedures handled problems of non-response in a professional way.
Also that the IHLCA-II survey design, extensive enumerator/supervisor training, and editing procedures has been appropriate even if it is not known to which extent measurement errors have been eliminated.

Outliers

Outliers are always part of original collected data. In most cases they can be avoided by making corrections in the earliest stages i.e. during or immediately after the interview or when answers are being reviewed by the team supervisor.

Remaining outliers are in most cases found in the data entry process where data are compared with rules for acceptance (micro-editing) or with compiled data for other households in the region (macro-editing).

In the IHLCA-II survey both methods have been used, outliers identified and corrected or removed. If there are still outliers in the data that effect results future analysis will show.

Imputations

Imputations have been made for rent using multivariate regression. Average or median prices for food and food in kind have been used both in the case of outliers but also to get a value for the consumption of own produce.

The overall conclusion is that the IHLCA-II data editing has minimized the effect that outliers and non-response may have had on indicator estimates in a professional and methodological sound way.

3.3 Timeliness/Punctuality

It was planned that the IHLCA-II reports should be released in early December 2010. All compilations needed for the reports were also available at that time. Due to external factors that could not be internally controlled the three major reports *Poverty Profile Report*, *MDG Data Report* and *Poverty Dynamics Report* will not be submitted to the Planning Department for approval before late February 2011.

From the table below it can be seen that the reference calendar for household expenditure varies depending on the recall period. For food last 7 days it is 6 months when combining the two rounds, while in the 6-months recall it is 11 months (June 2009 – April 2010).

Since the main reports will be available for study by February -March 2011 some data will be more than 20 months "old", which for this type of survey is more common than not.

Recall periods in the 2009/2010 IHLCA survey								
	Month number	Month	Fieldwork periods	Follow-up on problems	Recall 6 months 1st round	Recall 6 months 2nd round	Recall last month	Recall last 7 days
2009	5	May						
	6	June						
	7	July						
	8	August						
	9	September						
	10	October						
	11	November						
	12	**December**						
2010	1	January						
	2	February						
	3	March						
	4	April						
	5	**May**						

The overall conclusion is that the IHLCA-II survey is punctual with minor delay of results. The survey design gives a long reference period for some non-food expenditure but when comparing with similar surveys in other countries data are reasonable timely.

3.4 Accessibility/Clarity

Since survey findings yet have to be approved by the Government data are not available to stakeholders and end users.

However, it is planned for a number of steps to be taken in order to make micro- and/or macrodata available:

1. The final reports will be printed and published in the 1st Quarter of 2011
2. A survey database will be developed and implemented simultaneously at UNDP in Yangon and the Planning Department in Nay Pyi Taw. This database will be the reference data point for further analysis. It will later also include (coherent) data from other sources to allow for cross-sectional studies. The database will also ensure data maintenance, integrity and security.
3. A series of seminars and workshops will be given. The first ones will present the main reports to stakeholders/end users for discussions.

The overall assessment is that survey data will be accessible by the first or second quarters of 2011.

3.5 Comparability

Comparability is very high with the IHLCA-I survey since both are using the same survey design and set of questionnaires. Data editing has been done in the same way in both surveys.

Comparability with earlier surveys is not of the same degree.

The overall conclusion is that the two IHLCA surveys are highly comparable and that trend analysis using survey data is feasible.

3.6 Coherence

The result of any survey is the product of survey design, field operations, data editing and processing. But since surveys often differ in these respects comparability with other surveys on the same areas of interest will be affected.

Survey quality should therefore be assessed on the basis of comparison with other reliable sources or with information obtained by using improved procedures.

The aim in this section is therefore to make some possible comparisons between some items in the 2009/2010 IHLCA and the Myanmar 2003 Census of Agriculture conducted by the Directorate of Agriculture within the Ministry of Agriculture with technical assistance from the Food and Agriculture Organization of the United Nations.

In doing this comparison the following factors should be borne in mind:

- The enumeration of the holdings during the Myanmar 2003 Census took place in 2003;
- The definitions of households and holdings used by both operations were quite similar.
- The definitions of plots used by both operations were different. In the Myanmar Census 2003, a plot was allowed to have more than one crop in the area of the plot. In the IHLCA survey if the plot houses more than one crop at a time, the plot was divided according to the area for each crop.[9]

Once these preliminaries are out of the way, the following tables can be constructed. It is based on the results of the Myanmar 2003 Census and the tables produced from the IHLCA data set.

Table 1(a): Comparison between IHLCA 2009-2010 and Myanmar 2003 Agricultural Census

	Total Area(acres)	Number of Plots	Number of Agricultural Households	Population of Agricultural Households
IHLCA 2009-2010 Survey	24,961,896	5,793,747	3,403,993	18,138,846
Myanmar 2003 Census of Agriculture	21,550,113	3,453,850	3,453,850	17,464,398

[9] If two crops were produced on one plot at the same time, then the respondent was asked what area was sowed for each crop. In the plot description, the plot was divided in two.

Table 1(b): Comparison between IHLCA 2009-2010 and Myanmar 2003 Agricultural Census

State/Region	IHLCA 2009-2010		Myanmar 2003 Agricultural Census	
	Area(acres)	Agricultural Households	Area(acres)	Agricultural Households
Kachin	738,783	93,624	385,595	89,424
Kayah	60,128	11,242	56,847	17,123
Kayin	710,564	132,052	97,365	33,095
Chin	89,589	35,447	195,433	65,753
Sagaing	3,799,519	473,227	3,407,925	488,275
Tanintharyi	545,875	68,784	348,832	81,563
Bago (E)	1,849,402	182,708	1,258,427	160,079
Bago (W)	1,543,292	210,071	1,356,896	248,233
Magwe	2,554,575	404,639	2,450,611	417,345
Mandalay	3,049,714	494,836	3,100,820	466,851
Mon	1,268,809	144,862	780,825	109,504
Rakhine	716,784	150,651	928,250	241,698
Yangon	986,545	93,813	1,158,172	119,185
Shan (S)	709,861	169,745	507,902	135,598
Shan (N)	920,898	190,447	691,459	174,768
Shan (E)	192,714	59,897	56,354	22,926
Ayeyarwaddy	5,224,845	487,947	4,768,400	582,430
Union	**24,961,896**	**3,403,993**	**21,550,113**	**3,453,850**

In terms of Holdings areas, number of holdings and population of holdings, the two operations are quite consistent with each other within sampling errors and other variations. The Myanmar 2003 Census of Agriculture has for instance excluded many more households from their operation than the IHLCA 2009-2010 survey. The main differences reside in the number of plots; this was expected because as already pointed out, the definitions of plots used were substantially different and essentially explained the differences observed.

The overall conclusion is that it is still too early to say anything about the data coherence. This should though be studied in the near future.

4. Summary

The table below summarizes the discussions and conclusions in the previous chapter. It includes possible indicators for verification even if all numbers are not given. However, many of the numbers can be found in the Technical Report and its Supplement (in specific standard errors), and in ANNEX 2.

PRINCIPLE	COMPONENTS	ASSESSMENT/ ACTIVITIES	INDICATORS/ VERIFICATION	CONCLUSIONS
RELEVANCE	• User needs • Questionnaire content	The overall HDI programme demands a needs assessment through discussions with stakeholders. This has been done. The questionnaire content is basically the same as in the previous IHLCA-I survey. In the evaluation of the survey the general understanding was that the questionnaires well mirrored the information that was wanted. However, new questions covering changes over time have been included but the domains of study remain.	Number of workshops with stakeholders. Participation lists. Questionnaires and manuals.	The IHLCA-II survey meets the user needs, is relevant and complete with regard to the survey objectives and scope. Questionnaires are relevant and targeting information wanted
ACCURACY	**Sampling errors**: • Sampling errors	The sampling is PPES. If the used size estimates differ much from (the unknown), the weights used in the estimation will affect the result and may lead to false conclusions. However, it is difficult to overcome the problem and to assess the bias that is introduced.	Standard errors (SE) and/or Coefficients of variation (CV) for main variables and cross-sections.	The sampling design is appropriate and that precision of estimates is acceptable at both national and state/region levels. SEs have been computed and the sampling error sizes are within what has been targeted in the sampling design.
	Non-sampling errors: • Coverage • Outliers • Imputations • Questionnaire and manuals are	45 townships were left out of the sampling frame while 3 were excluded after outliers have been identified and proper actions taken to minimize unwanted effect on estimates. Outliers have been detected and adjusted, manually	Population rate of excluded sampling units. Number of outliers corrected for main indicators.	Coverage errors have been dealt with in the best possible way taken the difficulties into account. Effects have been further reduced by adjusting weights when appropriate.

PRINCIPLE	COMPONENTS	ASSESSMENT/ ACTIVITIES	INDICATORS/ VERIFICATION	CONCLUSIONS
	ambiguous • Respondent errors • Interviewer errors • Non-response	and in the data entry stage. Imputations have been made in accordance with sound statistical practice. Manuals for field workers have been developed. Questionnaires have been pre-tested. Training has been carried out. Supervisor controls are done and identified respondent/interviewer effects are tended to.	Imputation scheme. Number of households in pre-tests. Number of questionnaire improvements. Number of training sessions. Number of staff trained. Number of (unannounced) visits by the Technical Unit and by township supervisors. Unit response rate. Item response rate.	The survey design, extensive enumerator/ supervisor training, and editing procedures have been appropriate even if it is not known to which extent measurement errors have been eliminated. The IHLCA-II data editing has minimized the effect that outliers and non-response may have had on indicator estimates in a professional and methodological way. Imputations have been made in a sound statistical manner.
TIMELINESS/ PUNCTUALITY	• Lead time between enumeration release of data • Results on time	The survey was successfully undertaken in December 2009 and May 2010. The reference period for some data is 12 months and relate to mid-year 2009. Data processing has been carried out timely and tabulations for reporting were finalized according to plan (end of November 2010)	Filled-out and processed questionnaires on time Tables on time	The survey is punctual with minor delay of results. The survey design gives a long reference period for some non-food expenditure but when comparing with similar surveys in other countries data are reasonable timely.
ACCESSIBILITY/ CLARITY	• Dissemination • Databases	A dissemination plan will be developed. A database for IHLCA survey data will be developed and implemented.	Dissemination plan. Databases implemented. Workshops/seminars.	Survey data data will be accessible in the first quarters of 2011.

PRINCIPLE	COMPONENTS	ASSESSMENT/ ACTIVITIES	INDICATORS/ VERIFICATION	CONCLUSIONS
COMPARABILITY/ COHERENCE		The survey design was retained	Survey design Trend analysis Assessment of other sources for household indicators	The two IHLCA surveys are highly comparable and that trend analysis using survey data is feasible. It is still too early to say anything about the data coherence. This should though be studied in the near future.

5. Outlook and recommendations for the future

There was a 5-year span between the two IHLCA surveys. This periodicity should be kept which means that the Planning Department with support from UNDP should plan for the IHLCA-III survey to be undertaken in 2014/2015. The year 2015 is also the MDG year and most recent data should be used to assess to what extent the MDGs have been reached.

In the following a number of recommendations are given to be used as input in the survey planning process.

A. Establish a Quality Management mechanism that is accountable and verifiable designed to optimize survey operations and control.

B. Carry out a study where interviewer effects are measured also try especially to find out if there is an apparent respondent fatigue. Use the results to improve enumerator and supervisor training and the field operations setup.

C. Carry out a study of seasonality. November and May have been selected as survey months for IHLCA-I and IHLCA-II. It would be of interest to see if and how expenditure and income varies over the calendar year.

D. Consider using wards/Village Tracts as primary sampling units for surveys in the future. There are 279 accessible townships (PSUs). This is a rather small number of units to serve as primary sampling units. In 17 strata (districts) the number of PSUs is less than three, in those cases both townships should be included in the sample. The sample in these 17 strata will effectively be a sample where wards/VTs are the 7 primary sampling units. Consider using wards/VTs as PSUs in all the strata. In this way many more PSUs will be in the sample and that would reduce the variances considerably. The wards and village tracts are well-defined administrative units that would serve well as primary sampling units. Another advantage of having wards/VTs as PSUs is the possibility to control the sample over urban rural areas. A problem with the townships as PSUs is that the sample has to be allocated to urban/rural parts individually in each township (the standard 1:3 rule doesn't work well). A precondition for using wards/VTs as PSUs is that fairly accurate information on number of households is needed for each ward/VT. There are also arguments against using wards/VTs as PSUs. A large sample of wards/VTs will cover all or almost all of the townships in the country. If the costs for establishing and running the survey within a township are high then the fact that all townships must be visited is an argument against using wards/VTs as PSUs. It is suggested that the survey team analyzes the cost structure of the survey and explores ways of reducing the overhead costs at township level.

E. Consider using state/regions as strata for surveys in the future. In most surveys estimates are not presented on district level but rather on state/region level. In this case you do not have to use districts as explicit strata and do not need to allocate the sample rather evenly (square root allocation) over districts as is done in the IHLCA surveys. A better way is to define state/regions as strata and allocate the sample so that all state/regions get a fair sample size. The next step is to order the PSUs (townships or, better, wards/village tracts) in geographical order within the state/region and to select the sample of PSUs by systematic sampling. In this case a well-spread sample is obtained with an implicit stratification on district level.

F. Consider increasing the sample size within selected wards/village tracts for surveys in the future. Now 12 households are selected from each selected ward/village tract. It may be better to select fewer wards/village tracts and take a larger sample of households in each ward/village tract, for example 15-20 households per ward/village tract. In that way the work of delineating street segments and villages and obtaining household counts will be reduced substantially. If the sample per ward/VT is increased to 16 households the sample of wards/VT can be reduced from 1550 to 1160. This would significantly reduce the costs for the survey. However, the price to pay for the expansion from 12 to 16 households is an increase in the variance. At present there is not sufficient information on costs and variances to assess if an expansion of the sample within

wards/VT is sensible. It is recommended that data on survey costs and variances are analyzed for the benefit of future household surveys.

G. Impose a better control of size of street segments. The street segments are delineated in the field. Some of the street segments created in IHLCA-1 are rather large, containing more than 250 households. In some of these cases the ward itself is so small that segmentation has been deemed unnecessary. In other cases the ward is large and the delineation of segments has resulted in rather large segments. Street segments of more than 250 households are needlessly large. The costs for listing the households will be more than double the costs in a 100 household segment. For future surveys consider having a procedure in place that prevent the delineation of segments with more than, say, 200 households.

A final recommendation that is not directly related to IHLCA but has a bearing on household surveys in general: Try to coordinate the national surveys and centralize the survey organization. This is a bigger issue concerning management of the national household surveys. The current situation is that national household surveys are planned, designed and executed separately in several ministries without any serious coordination of content, concepts, samples etc.

There are several problems with such an organization (or lack of organization) of the national household survey work. A centralized survey organization has a number of advantages:

Effective use of resources
There are substantial synergies to be found in a centralized national survey organization where survey personnel and facilities are shared by several surveys.

Facilitates standardization of concepts and definitions
It is much easier to work with standardization issues in a central survey organization.

Facilitates the development of a strong national survey capability
It is easier to build a "critical mass" of survey professionals in a central organization.

ANNEX 1. ESS Quality Principles

RELEVANCE

Relevance is the degree to which statistics meet current and potential users' needs. It refers to whether or not all statistics that are needed are produced and the extent to which concepts used (definitions, classifications etc.) reflect user needs.

ACCURACY

Accuracy in the general statistical sense denotes the closeness of computations or estimates to true values.

TIMELINESS AND PUNCTUALITY

Punctuality refers to the time lag between the release date of data and the target date when it should have been delivered, for instance, with reference to dates announced in some official release calendar, laid down by regulations or previously agreed among partners.

Timeliness on the other hand reflects the length of time between its availability and the area of interest or event it describes.

ACCESSIBILITY AND CLARITY

Accessibility refers to the physical conditions in which users can obtain data: where to go, how to order, delivery time, clear pricing policy, convenient marketing conditions (copyright, etc.), availability of micro or macro data, various formats (paper, files, CD-ROM, Internet…), etc.

Clarity refers to the data's information environment whether data are accompanied with appropriate metadata, illustrations such as graphs and maps, whether information on their quality also available (including limitation in use…) and the extent to which additional assistance is provided.

COHERENCE AND COMPARABILITY

Coherence of statistics is their adequacy to be reliably combined in different ways and for various uses. It is, however, generally easier to show cases of incoherence than to prove coherence.

When originating from a single source, statistics are normally coherent in the sense that elementary results derived from the concerned survey can be reliably combined in numerous ways to produce more complex results.

When originating from different sources, and in particular from statistical surveys of different nature and/or frequencies, statistics may not be completely coherent in the sense that they may be based on different approaches, classifications and methodological standards.

Comparability aims at measuring the impact of differences in applied statistical concepts and measurement tools/procedures when statistics are compared between geographical areas, non-geographical domains, or over time. It is the extent to which differences between statistics are attributed to differences between the true values of the statistical characteristic.

There are three main approaches under which comparability of statistics is normally addressed, *comparability over time, between geographical areas, and between domains*.

- Comparability over time refers to comparison of results, derived normally from the same statistical operation, at different times.
- The geographical component of comparability emphasises the comparison of statistics between countries and/or regions in order to ascertain the meaning of aggregated statistics.
- Comparability between domains refers to non-geographical domains, for instance between industrial sectors, between different types of households, etc.

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ANNEX 2. Undercoverage and variance estimates

Figure 1: Map of Excluded and inaccessible Townships during IHLCA Survey Operations

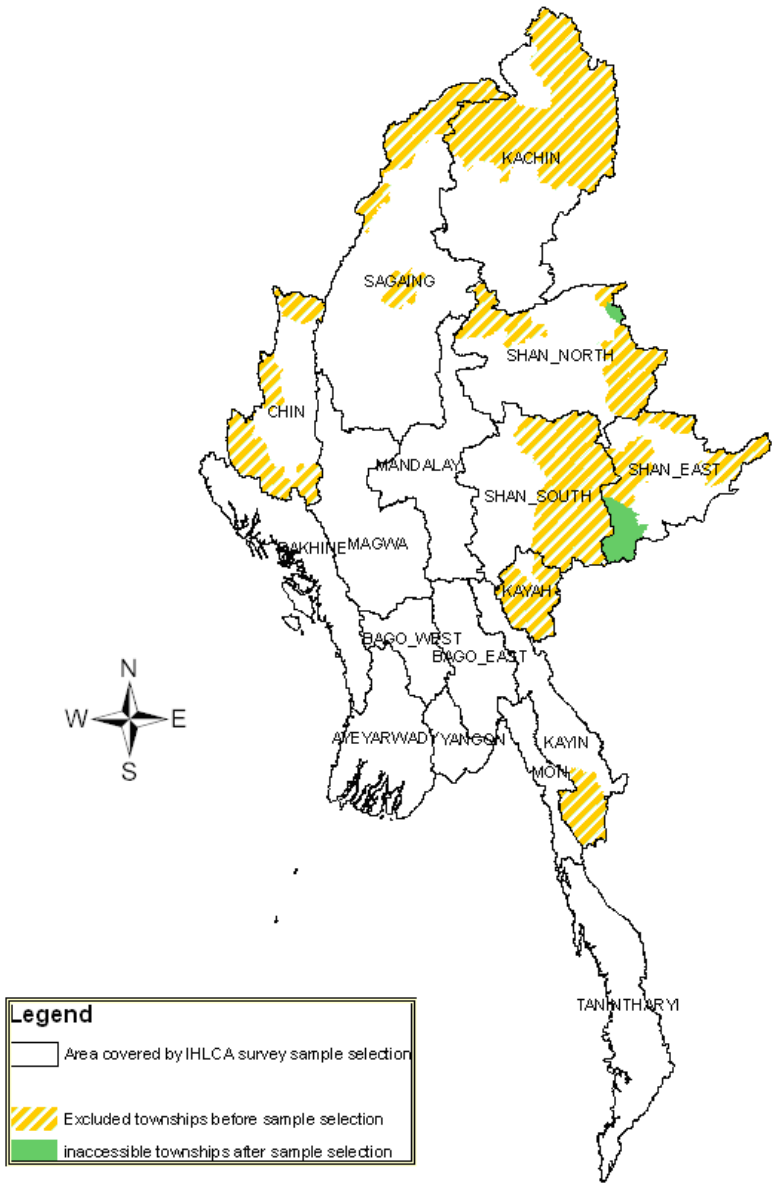


Table 2: Estimated Population and Number of Households Left out of the Survey

State/Region	Number Of Households in Excluded Townships	Estimated Population By IHLCA Survey in Excluded Townships	Number Of Households missing from the frame	Estimated Population missing from the frame By IHLCA Survey
Kachin	15,389	80,177	10,578	55,110
Kayah	20,965	109,228		
Kayin	37,512	195,438	4,242	22,103
Chin	30,082	156,727	143	745
Sagaing	32,636	170,034	180	939
Tanintharyi			557	2,899
Bago (E)			3,011	15,690
Bago (W)				
Magwe			1,681	8,760
Mandalay			559	2,913
Mon				
Rakhine				
Yangon	159	828	28,899	150,566
Shan (S)	81,670	425,501	2,269	11,824
Shan (N)	23,764	123,810	18,656	97,197
Shan (E)	29,284	152,570	375	1,956
Ayeyarwaddy			517	2,696
Union	**271,461**	**1,414,312**	**71,669**	**373,396**

Table 3(a): Accuracy of survey Items used in calculating Poverty Profile Key indicators for IHLCA1 (Round 1 and Round 2 combined) (Survey item values are in adult equivalent, normalized and for a year) (Union)

Item name	Unit	R	SE(R)	CV(R) (%)	95% confidence limits	
					Lower	Upper
Household total expenditure	Kyat	220910.16	6093.62	2.76	208967	232854
Household total food expenditure	Kyat	161347.26	4763.64	2.95	152011	170684
Household non-food expenditure	Kyat	59562.90	2060.31	3.46	55525	63601
Household Rent expenditure	Kyat	17052.79	1668.71	9.79	13782	20323
Household health expenditure	Kyat	11593.54	809.03	7.34	10008	13179
Household education expenditure	Kyat	6269.78	262.33	4.16	5756	6784
Household size	Number	5.21	0.04	0.80	5.13	5.29
Total number of households	Number	7,455,075	191373.39	2.57	7079983	7830167
Total Population	Number	38,815,923	873718.45	2.25	37103435	40528411

Table 3(b): Accuracy of survey Items used in calculating Poverty Profile Key indicators for IHLCA2 (Round 1 and Round 2 combined) (Survey item values are in adult equivalent, normalized and for a year) (Union)

Item name	Unit	R	SE(R)	CV(R) (%)	95% confidence limits	
					Lower	Upper
Household total expenditure	Kyat	526,109.68	8,404.00	1.60	509,638	542,582
Household total food expenditure	Kyat	376,455.63	4,801.07	1.28	367,046	385,866
Household non-food expenditure	Kyat	149,654.04	5,065.59	3.38	139,725	159,583
Household Rent expenditure	Kyat	47,343.90	3,811.75	8.05	39,873	54,815
Household health expenditure	Kyat	27,219.12	1,901.09	6.98	23,493	30,945
Household education expenditure	Kyat	9,242.86	326.93	3.54	8,602	9,884
Household size	Number	5.00	0.04	0.75	4.93	5.08
Total number of households	Number	8,227,043	177,621	2.16	7,878,907	8,575,179
Total Population	Number	41,148,312	933,941	2.27	39,317,788	42,978,835

Table 4(a): Sampling Precisions at State/Region level for IHLCA1 (round 1 and round 2 combined)

S/R Name	Household total expenditure		Household total food expenditure		Household non-food expenditure		Household size		Total number of Households		Total Population	
	R	CV(R) (%)	R	CV(R) (%)	R	CV(R) (%)	R	CV(R) (%)	X	CV(X) (%)	Y	CV(Y) (%)
Kachin	197164.65	4.64	138862.47	5.43	58302.19	5.20	5.97	3.07	152179	2.56	908921	4.18
Kayah	201392.49	4.44	149553.52	3.46	51838.97	7.27	5.46	4.67	17448	0.67	95271	4.00
Kayin	248685.00	5.10	196452.80	5.73	52232.20	3.24	5.55	1.26	166740	12.63	925889	13.51
Chin	155987.63	13.81	128888.04	18.71	27099.59	10.43	5.95	4.28	47345	1.23	281546	4.34
Sagaing	217249.46	3.22	170594.28	4.51	46655.18	5.60	5.53	0.97	746637	3.58	4132122	2.94
Tanintharyi	223219.34	7.61	155706.05	6.28	67513.28	11.42	5.81	4.15	184727	4.73	1072583	1.47
Bago(E)	209507.74	5.50	158570.19	5.36	50937.56	5.98	5.20	3.14	436696	7.28	2271403	4.84
Bago(W)	207775.80	4.65	163106.30	4.99	44669.49	8.05	4.16	2.97	413699	3.95	1721608	4.81
Magwe	192722.48	6.22	150051.11	5.45	42671.37	9.74	4.97	1.97	688547	5.78	3419537	7.41
Mandalay	202552.88	4.25	148855.34	3.68	53697.54	6.73	5.25	1.69	1086947	1.50	5706224	2.33
Mon	226402.58	6.78	170977.54	8.29	55425.03	3.64	5.31	2.65	317762	4.96	1687151	3.92
Rakhine	198154.56	4.13	140401.13	4.86	57753.43	3.46	6.00	3.11	466523	6.30	2796909	3.65
Yangon	299902.18	11.65	198081.18	14.40	101820.99	7.23	4.73	1.84	1050076	7.45	4968312	6.86
Shan(S)	206734.57	12.74	144429.04	11.00	62305.53	16.78	5.55	9.71	258206	7.17	1433885	16.88
Shan(N)	183439.75	6.59	140437.98	5.94	43001.78	8.77	5.46	3.46	249197	4.29	1361394	5.07
Shan(E)	181799.35	10.66	134193.54	8.29	47605.81	17.75	5.54	5.51	74,737	2.72	414,348	8.06
Ayeyarwady	217559.38	2.39	156824.92	2.12	60734.46	5.38	5.12	0.77	1097608	1.85	5618821	1.84
Union	**220910.16**	**2.76**	**161347.26**	**2.95**	**59562.90**	**3.46**	**5.21**	**0.80**	**7,455,075**	**2.57**	**38,815,923**	**2.25**

Table 4(b): Sampling Precisions at State/Region level for IHLCA2 (round 1 and round 2 combined)

S/R Name	Household total expenditure		Household total food expenditure		Household non-food expenditure		Household size		Total number of Households		Total Population	
	R	CV(R) (%)	R	CV(R) (%)	R	CV(R) (%)	R	CV(R) (%)	X	CV(X) (%)	Y	CV(Y) (%)
Kachin	507,418	2.08	351,355	2.29	156,064	4.11	5.79	2.49	187,485	6.03	1,085,511	6.52
Kayah	593,638	4.22	413,414	4.90	180,224	2.66	5.24	3.39	19,512	1.49	102,297	1.89
Kayin	550,874	0.65	435,229	3.74	115,644	16.83	5.60	0.35	206,852	18.22	1,157,550	18.55
Chin	349,906	2.13	260,330	4.95	89,576	6.44	6.05	6.12	49,254	3.97	297,772	7.89
Sagaing	540,993	1.69	415,408	1.77	125,585	6.70	5.21	2.56	816,953	2.74	4,255,273	4.81
Tanintharyi	509,034	8.92	337,136	4.35	171,897	18.25	5.74	2.52	195,413	8.48	1,122,371	6.08
Bago	536,879	2.92	427,513	3.25	109,366	1.82	4.57	2.40	913,902	4.18	4,172,177	3.89
- Bago(E)	528,091	4.53	412,994	5.20	115,097	2.67	4.92	2.77	470,025	7.28	2,313,953	6.25
- Bago(W)	546,184	3.65	442,888	3.94	103,296	2.69	4.19	4.18	443,877	3.82	1,858,224	3.95
Magwe	492,369	1.41	380,277	3.13	112,092	8.46	4.80	1.80	729,267	4.45	3,498,499	5.46
Mandalay	523,721	3.38	370,707	3.86	153,014	5.15	5.00	1.76	1,186,789	2.10	5,928,241	2.27
Mon	529,414	2.66	375,854	4.09	153,559	1.23	5.19	3.15	340,912	6.57	1,768,785	3.81
Rakhine	451,349	7.46	342,133	5.86	109,217	12.67	5.85	0.60	503,590	1.85	2,947,422	1.79
Yangon	638,762	7.32	373,337	4.56	265,426	11.42	4.66	2.71	1,140,806	12.70	5,321,358	13.50
Shan	490,730	7.93	357,566	5.71	133,164	14.19	5.29	4.10	639,221	3.38	3,381,892	5.96
- Shan(S)	520,856	15.06	378,432	11.24	142,423	25.18	5.25	8.91	286,016	2.88	1,502,601	11.79
- Shan(N)	476,445	8.36	347,704	5.23	128,740	17.83	5.21	1.61	276,898	7.16	1,443,816	6.08
- Shan(E)	429,648	3.89	315,137	1.14	114,511	13.50	5.71	6.26	76,307	3.46	435,475	9.12
Ayeyarwady	483,816	3.65	348,628	3.26	135,189	6.74	4.71	1.83	1,297,087	4.91	6,109,163	5.87
Union	**526,110**	**1.60**	**376,456**	**1.28**	**149,654**	**3.38**	**5.00**	**0.75**	**8,227,043**	**2.16**	**41,148,312**	**2.27**

ANNEX 3. Quality Management frameworks

Quality through inspection

Inspection is done when the final product is finished, i.e. normally no inspection during the production process. The product is accepted if it meets certain criteria, e.g. min/max weight. A specific method is acceptance sampling where a sampled batch of products is rejected if a certain number of them are defect.

It has to be remembered though that the model is product-oriented; the quality of the organisation as a whole is not involved.

Total Quality Management

TQM sets focus on the overall quality of products and services. It is defined through a number of core values, that set up the framework:

- Customer orientation
- Leadership and the participation of all staff
- Process orientation
- Measurements and understanding of variation
- Continuous improvement

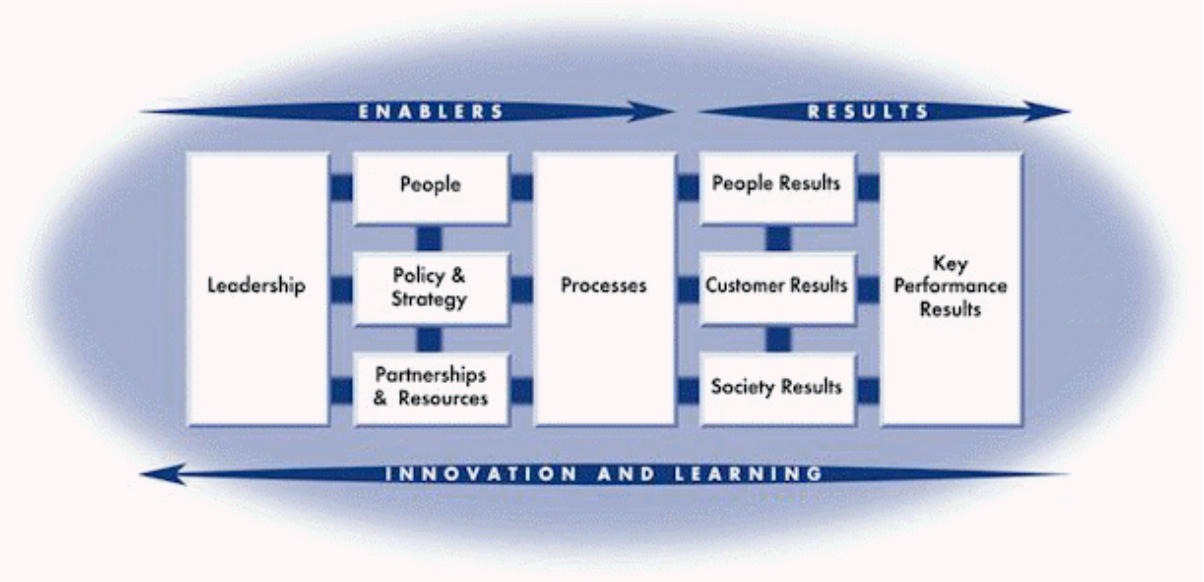
Its strength lies in the overall contemplation of processes aiming at adding value to the customer through continuous improvement, in which all members of an organisation have to be involved. However, quite different ways are possible to apply this approach in practice. TQM offers no guidance on its practical implementation. It is this weakness that has lead to the development of more concrete models (see below).

EFQM Excellence model

The European Foundation for Quality Management (EFQM) is a private-non profit organisation that has developed and maintained a TQM-based applied quality model for use by its Excellence model. Altogether 9 criteria with 32 sub-criteria have been identified to cover all aspects of TQM. 5 of the criteria refer to what an organisation *does*, and are therefore called the "enablers". They comprise the criteria on leadership, policy and strategy, people, partnerships and resources, and processes.

The other 4 criteria cover what this organisation *achieves*, and are summarised under the term “results", including customer results, people results, society results, and key performance results of the organisation.

The model is a tool that delivers the basis for appropriate measures aiming at quality improvements. Since the model is used all around Europe it can serve as a benchmark option when comparing performance of the organization with other similar. However it takes time to implement the model which is a drawback.



Balanced Score Card

The Balanced Score Card is a tool by which the performance of the organisation can be evaluated in a well-balanced way. Vision and strategy of an organisation are translated top-down into quantifiable initiatives at the operational level. Mission and strategy are transformed into a comprehensive collection of performance indicators. This collection forms a framework of a strategic "measure-and–management" system.

ISO

The ISO quality philosophy is that you "do what you put down in writing" and that you "put down in writing what you do". The process in practice has to be transparent.

The ISO model focuses, like EFQM, on core values like customer orientation, leadership and participation of all, process orientation, and continuous improvement.

The ISO 9000 standards are customer oriented in the sense that the customer stipulates the condition to the quality system of the producer.

Six Sigma

This is an approach that focuses heavily on continuous improvement to shorten cycle times and increase yields, but the most important goal is to reduce the variation in the output of the processes. The basis for the approach is to establish very formalised measurements of out put characteristics. These characteristics need to be critical to the customer, as the customer should define what the target value and defect determinant is. A lot of emphasis is put on the reliability of the measurements: they need to be subject to a minimum of measurement error.
Project teams, that are made up of all the staff of the organisation and that utilises basic quality management tools as well as more advanced methods of analysis, drive the improvement work. The teams work in a formalised way through the stages: *Measure, Analyse, Improve,* and *Control.* For the purpose of improvement not only output characteristics are measured, but also input characteristics.

The Control phase aims at verifying the effects and institutionalises the results, i.e. make them visible in the organisation.

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