Statistical Training Needs and Capacity Assessment

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**Summary of objectives**

The objectives are laid out in the terms of reference. The overall aim is to develop estimations of the needs for statistical training and the capacity to train at all levels - the demand and the supply for training.

This task involves the following stages:

- Assess the scope of needs: identify volume and type of training needed to respond to demands for statistics;
- Evaluate the existing capacity of statistical training in the region;
- Identify the gaps between training capacity and statistical needs;
- Identify key challenges;
- Propose a strategy to fill the gaps.

Concretely, the demand is to be assessed at the following levels: certificate, under-graduate diploma, 1st degree, post-graduate diploma and post-graduate degree.

1. **Approach**

The following characteristics are needed of a successful training strategy. A strategy must be:

- Fit for purpose: capable of providing for the training and education of African statisticians and statistics users to meet the demand for quality statistics – hence quantitative;
- Complete: includes any complementary actions necessary to make training effective;
- Cost-effective;
- Flexible enough to meet rapidly changing needs for statistics;
- Sustainable in the face of unexpected changes in finances.

There are two fundamental reasons for training:

- to carry out statistical or other tasks effectively
- to change the way things are done

Training is therefore linked to obtaining and applying various competences so that the organisation’s activities can be carried out effectively and efficiently. The assessment methodology is based on applying these principles.

2. **Assumptions and information sources**

The demand for statistics training is derived from the demand for good quality statistics. New statisticians need education and training. The statistics to be disseminated and the methods used to compile them change regularly, so practicing statisticians need to be updated. The analysis of the demand for statistics training is based on the following considerations:

- Training will be analysed for a steady state level of demand. The numbers of statistics staff National Statistics System (NSS) are assumed to remain broadly similar to the numbers recorded in the source documents below. The staff numbers and structures are considered to be unchanged from these documents for the foreseeable future.
- However, if a country decides to expand its NSS, builds statistical capacity and provides the finance to maintain this capacity, the number of statistics staff is likely to increase. This leads to an increase in the demand for training.
In other countries, it is anticipated that there is a lack of training resources, internal or external. This means that training would be carried out at lower than sustainable levels. The two effects are assumed to cancel each other out.

The assumption is therefore made that the staff levels observed in the documents obtained and listed below are an appropriate basis to analyse the demand for training.

The analysis of training capacity, otherwise described as the supply or provision of training, covers all training bodies: regional statistics training institutes, universities, other tertiary education institutes (e.g. Polytechnics, Technikons) and in-service training provided by NSIs themselves. Distance learning and e-learning are included. Training institutes specialising in demography, as well as courses in demography are considered as part of the supply of statistics training.

The capacity to train statisticians can be measured by a number of factors:

- the numbers of students graduating by academic year, course & gender;
- the numbers, knowledge and skills of a training institute’s educators;
- the capacity of its management to ensure the institute’s smooth operation in educational and in economic terms;
- the institute’s financial resources;
- and the institute’s training and student accommodation, equipment and space.

This paper uses as its primary capacity measure of capacity the numbers of graduating students, as this is an output measure. All the other capacity measures above are of inputs to statistics training. A large (say more than 10%) increase in student numbers or in the range of courses taught is likely to require an increase in one or more of the above input factors.

The following specific assumptions have been made about the delivery of training:

- Professional training is assumed to be carried out in the language region of the country concerned. Of course, some courses are carried out bilingually.
- Of course, some people are trained in a different language from that of their own country. We assume that the same number of students from Francophone countries study in Anglophone countries as the other way around.
- The reason why this assumption is made is so that each country can be assigned to a language region and the total amount of training required in the language region can be estimated. If no assumption was made about language, the total amount of training needed in Africa could be calculated but no disaggregation could be made to a language region. The data available does not allow training to be analysed for each country.

The data sources used were drawn from the Paris21 website, statistics training institute websites, NSI websites and other information sources. Other potential information sources include future training institute compendia and curricula reviews. On the side of demand for training, NSDSs and NSI annual reports were the main source of data.

- In 12 countries NSI professional statisticians were identified; in 5 countries there was insufficient data
- In 9 countries, NSI mid-level statisticians identified
- Staff turnover data was obtained from South Africa alone
- There was some data on the relationship between the numbers of NSI and non-NSI statisticians but this was incomplete and not usable

Data used to estimate results for non-observed countries and hence to scale up the results to the African continent was sourced from:

- UN Population Division: *World Population Prospects: 2010 Revision*
• GDP/person (not PPP adjusted): *African Statistical Year Book 2011*

The countries analysed were selected in order to provide a balance of large and small populations, linguistic regions, levels of income per person, level of statistical advancement and geographical balance.

The twelve countries analysed and the reference documents were as follows:

- **Chad**  
  Situation du système statistique tchadien à la fin de l’année 2001
- **Côte d’Ivoire**  
  La stratégie nationale de développement de la statistique 2009-2013
- **Ethiopia**  
  NSDS 2009-14
- **Ghana**  
  Statistics Development Plan 2009-2013
- **Kenya**  
  NSDS 2003-07
- **Mali**  
  Schéma Directeur de la Statistique, novembre 2005
- **Mauritania**  
  Paris21 Fiche d’information Mauritanie - Le système statistique national
- **Mauritius**  
- **Mozambique**  
  Peer Review March 2009
- **Nigeria**  
  Statistical Master Plan for the Nigeria National Statistical System (2004/5-2008/9)
- **South Africa**  
  Annual report 2010
- **Tanzania**  
  Statistical Master Plan 2008/09 – 2010/11
  Statistical Master Plan 2009/10 – 2013/14
  Assessment Results of the Current National Statistical System, 2007
  Peer review of Tanzania National Statistical System, September, 2007
- **Paris21**  
  Statistical Capacity Building (SCB) Indicators, 2002

The following documents were also reviewed but insufficient relevant information was found:

- **Botswana**  
- **Guinea**  
  Stratégie Nationale de Développement de la Statistique (SNDS) 2009 – 2013 : Résumé, août 2008
- **Morocco**  
  Plan d’action à long terme de la Direction de la Statistique, 2002
- **Sénégal**  
  Schéma directeur de la statistique du Sénégal 2008-13
- **Tunisia**  
  Les facteurs de réussite d’une réforme d’un Système Statistique National dans les pays en développement : Le cas de la Tunisie

The data in the above documents clearly do not relate to the same year. Hence, the implicit assumption is that the statistics systems are fairly stable over time in terms of the numbers of staff employed, so that the data can be pooled.

National statistics systems have varying structures, with some NSIs having a wider range of responsibilities than others. Clearly, those NSIs that cover a wider range of statistics tasks would be expected to employ more statisticians. Unfortunately, the data available means that it is not possible to identify the numbers of statisticians employed on each task. Of course, the statisticians not employed by the NSI are employed by other organizations in the NSS; in some countries we have this data. The assumption applicable is that the structural differences (the coverage of the NSI) do not have significant difference for overall employment numbers. Our objective, of course, is to measure the number of statisticians in the NSS as a whole.
3. Analysing the demand for training

The objective of all statistics training is to provide the competences that are needed to carry out any statistical activity, including management. For long-term courses, the required competence can be stated as the theoretical and basic practical knowledge required to undertake the tasks required of a professional or mid-level statistician.

The training target group consists of the personnel who are involved in each statistics activity, including the use of statistics. Each training target group needs to be identified and quantified. In order to produce a consistent analysis of training that is comparable between countries and between language regions, we classify all staff grades of statistics producers into the following groups:

- Management
- Professional statisticians
- Mid-level statisticians
- Professionals other than statisticians (e.g. information technology staff, graphic designers and others)
- Others (e.g. secretaries and drivers – no analysis of this group is needed)

Demographers and economists etc. can be considered as included with statisticians.

Management can be defined as people who are not involved in compiling statistics on a day to day basis. This group can be considered together with that of ‘professionals other than statisticians’, such as IT personnel and graphic designers. The group of Professional statisticians is defined as those employees who are or will be primarily responsible for compiling statistics within their area of responsibility. Professional statistics staff grades normally require personnel to hold university degrees or statistics engineering certificates qualifications. Mid-level statisticians are responsible for compiling statistics under the direction of a Professional statistician. Access to Mid-level statistician staff grades, with the exception of the most junior grades, is usually through a statistics certificate or diploma taking one or two years after school. ‘Other staff’ includes secretaries, drivers and other staff.

Quantifying this group – counting the number of statisticians in Africa - provides the basis to analyse the demand for statistics training from NSS statistics producers. Additional sources of demand for statistics training are statistics users, as well as employers outside the NSS who require a qualification in any numerate subject, for whom statistics will suffice.

The basic challenge for this analysis of demand is that much of the documentation does not provide a comparable breakdown. In some cases, only professional statisticians are identified and not the whole workforce. (In the case of the Tanzania mainland, the professional and mid-level statisticians are treated as one group. The division between them is assumed.) The group of ‘Professionals other than statisticians’ is usually poorly defined. This group is not further analysed, as their training is not specific to statistics.

Hence, simply counting and classifying the number of African official statisticians is a considerable task. The data available is not sufficient to do this. Instead, the number of professional statisticians and managers in each country is estimated on the basis of the data collected and other statistics.

Why is the focus on professional statisticians (and managers) and not on all statisticians? It is the case that the data collected allows a better analysis of professional statisticians than mid-level statisticians. We can also consider that the numbers of mid-level statisticians are to an extent dependent on issues such as the ease of communications within a country and the degree of computerisation of the statistics office. If this is true, then the numbers of mid-level statisticians will vary considerably between countries.
Two testable hypotheses were examined to estimate results for non-observed countries and hence to scale up the results to the African continent:

1. That the number of professional statisticians in each country is primarily dependent on the size of the country’s population.

2. That the number of professional statisticians in each country is primarily dependent on both the size of the country’s population and on income, as measured by GDP/person.

The first hypothesis implies that differences in GDP/person do not have an observed impact on the number of professional statisticians. The second hypothesis implies that African countries employ more professional statisticians as their income increases.

Using the sample of twelve African countries documented above, the number of professional statisticians was regressed against the population size, both with and without GDP/person. The population data was taken from UN Population Division, *World Population Prospects: The 2010 Revision*, table of total population (both sexes combined) by major area, region and country. This is the population dataset that the UN-ECA / ADB statistics *Yearbook* uses. GDP/person figures were taken from the *African Statistical Year Book 2011*.

The results were clear: the number of professional statisticians is linearly related to a country’s population and not to its income per person. A polynomial equation was also fitted to the data but the linear relation is better, indicating that there are no ‘economies of scale’ with larger countries. A zero intercept was imposed, as otherwise the intercept would be negative.
Figure 1: The relation between the number of professional statisticians in African countries and their population

\[ y = 0.0032x \]

Statisticians vs population, South Africa
Linear (Statisticians vs population)
It should be noted that South Africa has been omitted from this equation as an outlier. Côte d’Ivoire, also an outlier, has been included. The equation R² is 0.90. Without Côte d’Ivoire, this would be better, indicating that the equation does not fully explain Côte d’Ivoire’s position. This is discussed below.

The results are shown in Figure 1 above. It should be carefully noted that the points shown are not the recommended numbers of professional statisticians, simply the estimated numbers of existing professional statisticians.

The smaller countries, Mauritius and Mauretania, lie a little above the fitted line, Chad and Mali a little below it. Côte d’Ivoire is much above the line, probably because of the presence in the country of a statistical training institute. Mozambique lies above the curve, as would be expected given the observed numbers of professional statisticians and the policy emphasis on statistics. Ghana is right on the fitted line while Kenya and Tanzania lie slightly below it. South Africa lies well above the curve – its data was not used to estimate the function. The numbers of South African professional statisticians may be considered to be partly a function of its higher GDP/person, partly a result of a policy decision and partly due to the number of universities in the country that deliver statistics related degrees. Ethiopia and Nigeria have larger populations than the other countries. Both are almost exactly on the line. In Nigeria’s case, this is partly due to its large size in a linear regression.

If we apply the equation to all Africa’s counties and territories, we can make an estimate of the numbers of professional statisticians in African NSIs.

There is no reliable observation on the number of non-NSI professional statisticians or the relation to the number of NSI professionals. We know the ratio varies enormously between countries but no more than this. In the absence of data, let us assume that there are an additional 30% of statisticians working in the NSS but outside the NSI. If data becomes available, it will be used.

The final number we need is the turnover rate. We have one (1) observation for professional statisticians from Statistics South Africa for 2009-2010. The value is 6.2%, implying that the average statistician stays with SSA for just over 16 years. Of course, the dispersion around this figure is bound to be considerable. This is an absolutely critical figure because it determines the numbers of replacement statisticians required and thus the number of training places needed. The sole observation is a sensible number. It is used for all of Africa, until more data is available.

We can now estimate the numbers of professional statisticians in Africa. Table 1 shows the estimations by linguistic group and zone. The estimated number of statisticians was used for this table, except where observed numbers could be used. Table 2 shows the estimated steady state number of statistical professionals (e.g. BSc, BA, ISE, ITS) that need to be trained each year.

Table 1: Estimated numbers of professional statisticians in Africa

<table>
<thead>
<tr>
<th>Group</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglophone</td>
<td>2046</td>
</tr>
<tr>
<td>Francophone</td>
<td>1130</td>
</tr>
<tr>
<td>Lusophone</td>
<td>226</td>
</tr>
<tr>
<td>Arabic</td>
<td>833</td>
</tr>
<tr>
<td>Sub-Saharan</td>
<td>3604</td>
</tr>
<tr>
<td>North Africa</td>
<td>531</td>
</tr>
<tr>
<td>Total</td>
<td>4235</td>
</tr>
</tbody>
</table>
Table 2 Estimated professional statistician training annual numbers

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglophone</td>
<td>127</td>
</tr>
<tr>
<td>Francophone</td>
<td>70</td>
</tr>
<tr>
<td>Lusophone</td>
<td>14</td>
</tr>
<tr>
<td>Arabic</td>
<td>52</td>
</tr>
<tr>
<td>Sub-Saharan</td>
<td>223</td>
</tr>
<tr>
<td>North Africa</td>
<td>39</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>263</strong></td>
</tr>
</tbody>
</table>

Individual country numbers are not shown because the supporting data is not sufficiently accurate!

We now need to estimate the number of mid-level statisticians. There were 12 observations of the numbers of professional statisticians (including an estimate for Tanzania). There are only 9 observations at mid-level: there was no data for Tanzania, Côte d'Ivoire, or Ghana. The ratio of mid-level staff numbers to professionals varies from 67% in Mozambique to 685% in Nigeria. Clearly, there is no prospect of relating population to the number of mid-level statisticians. Instead, the median ratio of mid-level statisticians to professionals is used. This works out at 178%. Actual numbers were used for the nine countries where they were observed. On this basis, we can estimate the numbers of mid-level statisticians in Africa, as shown in Table 3.

Table 3: Estimated numbers of mid-level statisticians in Africa

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglophone</td>
<td>4600</td>
</tr>
<tr>
<td>Francophone</td>
<td>1672</td>
</tr>
<tr>
<td>Lusophone</td>
<td>201</td>
</tr>
<tr>
<td>Arabic</td>
<td>1247</td>
</tr>
<tr>
<td>Sub-Saharan</td>
<td>6775</td>
</tr>
<tr>
<td>North Africa</td>
<td>945</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7720</strong></td>
</tr>
</tbody>
</table>

Applying the same turnover ratio as for professional statisticians, we derive an estimate for the number of trained mid-level staff each year (e.g. Certificate, Diploma, Adjoint technique de la statistique). The results are shown in Table 4.

Table 4 Estimated mid-level statistician training annual numbers

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglophone</td>
<td>285</td>
</tr>
<tr>
<td>Francophone</td>
<td>104</td>
</tr>
<tr>
<td>Lusophone</td>
<td>12</td>
</tr>
<tr>
<td>Arabic</td>
<td>78</td>
</tr>
<tr>
<td>Sub-Saharan</td>
<td>420</td>
</tr>
<tr>
<td>North Africa</td>
<td>59</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>479</strong></td>
</tr>
</tbody>
</table>

Finally, we need to analyse the demand for short-term courses for statistics producers. We can consider that there exists a five year statistics cycle, since many social surveys are conducted once every five years, while base years for index numbers such as price statistics and for constant price national accounts are recommended to be updated every five years. An average professional statistician or manager could therefore need both a methodological course (perhaps presented at sub-regional level) and a technical course (e.g. induction, current computer skills), usually presented at national level once every five years. Mid-level statisticians will have a similar structure for training, except that their courses are all presented
at national level. Sub-regional courses are assumed to have 12 participants on average, national courses, 20. The results are presented in Table 5.

**Table 5: Estimated annual demand for sub-regional and national short courses**

<table>
<thead>
<tr>
<th></th>
<th>Sub-regional</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglophone</td>
<td>33</td>
<td>112</td>
</tr>
<tr>
<td>Francophone</td>
<td>19</td>
<td>45</td>
</tr>
<tr>
<td>Lusophone</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Arabic</td>
<td>14</td>
<td>33</td>
</tr>
<tr>
<td>Sub-Saharan</td>
<td>58</td>
<td>171</td>
</tr>
<tr>
<td>North Africa</td>
<td>11</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>69</strong></td>
<td><strong>196</strong></td>
</tr>
</tbody>
</table>

The above figures provide an estimate for the demand for statistics training from the statistics producers within the National Statistics System. These estimates do not cover demand for training – by definition mostly short courses – from statistics users within the NSS, such as journalists and parliamentarians. Also excluded from these estimates is the demand for (generally) university level education in an undefined numerical subject from outside the NSS, such from commercial banks.

### 4. Supply considerations

The demand analysis has already identified the location where the training is carried out as being regional, national and / or local. Similarly, the course type and length has been defined as being short or long term, so that it delivers content that fulfils the course objective. Whether distance or e-learning is possible can only be determined at a subject level, for which sufficient data is not available.

The measures of institutional capacity focus on:

- Technical skills and training experience in areas of competence
- Management
- Financial resources (fees and other sources)
- Physical capacity
- Capacity measures from Compendium + Curricula review

For each competence identified, a training course will be matched. Courses where the match is contentious will be identified. Courses that do not exist will be identified and outlined. Courses that could be delivered by distance or e-learning will be identified. Accompanying measures to training will be identified where appropriate.

The management of process of training, learning, applying knowledge and change management in NSSs will be addressed.

Training of professional statisticians is generally carried out at regional level, although some national universities provide relevant education at this level. The level of demand by linguistic region has already been analysed. How does this compare with the supply or provision of training?

The francophone region is the easiest linguistic region to analyse because the bulk of training at this level is provided by the three statistics schools: ISSEA in Yaoundé, Cameroon, ENSEA in Abidjan, Côte d’Ivoire and ENSAE-Senegal in Dakar. These three institutions have a common entrance examination. CODESA is the coordinating organisation for the common examination, financed by France. CODESA reports that
around 150 students are admitted each year to the three schools, although presumable not all qualify. In
addition, IFORD in Yaoundé trains in demography. The capacity of 150 or so statisticians compares with
the estimate of demand at this level of around 104. This does not imply that there is over-capacity: the
private sector is a considerable user of educated statisticians. But this comparison does suggest that there
is no capacity shortage at this level.

In English-speaking Africa, the situation is slightly less clear. The School of Statistics and Applied Economics
at Makerere University, Kampala, Uganda provides an education that is aimed at public statisticians with
its Bachelor of Statistics degree. In 2005/06, 95 students were in the third year of this specific course
and there were 431 third (last) year students in total¹. Makerere also provides graduate level statistical
education. The listing of Anglophone statistics schools shows that a large number of institutions provide
degree level training, of various levels of pertinence to official statistics. Not many institutions provide
precise numbers of students but the University of Pretoria, Department of Statistics alone has more than
5 000 under-graduate students in total, although not all study at Bachelor of Science level. Statistics South
Africa is supporting a Master’s course at Stellenbosch University. We can safely conclude that there is no
shortage of capacity. As in the francophone region, it is clear that private sector demand for statisticians
accounts for the remaining students.

In the Portuguese speaking region, Universidade Eduardo Mondlane in Maputo is reported by the NSDS
Peer Review, 2009, to be training in cooperation with INE. The Mathematics and Informatics Depart-
ment offers a combined degree in mathematics and statistics: about 20 graduate a year. Given the level of
demand estimated at 14 places a year in the Portuguese speaking region, it is reasonable to say that this
course can provide at least sufficient capacity.

Turning to middle-level training, we note that training at this level is provided both in regional institutions
and at national level, often by an NSI’s training centre. In English-speaking countries, mid-level training is
generally provided through a first year certificate course, followed by a second year Diploma. There is of-
ten access to university from the Diploma. EASTC in Dar Es Salaam, Tanzania, is a regional centre that, ac-
cording to the Paris21 website, had 140 students enrolled in Certificate and Diploma courses in 2008/09.

Statistics South Africa noted in its 2011/2012 Work Programme that it has the medium term objective of
establishing its Isibalo Training Institute. With this new facility, plus the national level training units in many
NSIs, there will be no capacity shortage.

In Francophone Africa, mid-level courses are usually taught as one two-year courses. In the regional
centres, they are known as Techniciens Supérieurs de la Statistique at ISSEA and ENSAE-Sénégal and as
Adjoints techniques de la Statistiques and Adjoint Technique de la Statistique at ENSEA. Some countries
also have training units at this level. ISSEA’s website reports 38 students graduating at this level. 12
students are reported to have graduated from ENSAE-Sénégal at this level in 2011. ENSEA report 65
students in the two courses’ final years. As already noted, some national equivalent courses exist. There-
fore, there appears to be sufficient capacity at this level.

Since regional short courses can be held in regional training institutes outside of term time or can be sup-
ported by them, it appears that sufficient capacity exists here too.

It is difficult to measure national capacity to provide short course training. Where NSIs have developed
in-house training units, this type of course is usually the target. It is possible that some countries do not
have this capacity. In this case, expertal support will usually be required for short courses presented by
regional centres or other providers.

¹ Statistical Training at the Institute of Statistics and Applied Economics, Makerere University’ Jonathan Odwee, African Statistical
Journal Vol 1, 2005
5. Towards a strategy

The above results were arrived at on the basis of the data available. Clearly, better data is needed on numbers of statisticians working in NSIs and other NSS organisations. In particular, staff turnover data is required. Centralised data on the numbers of statistics students is also needed.

Nevertheless, the conclusions on professional statisticians seem to be fairly well founded, largely because of the strong relationship between population and the number of these statisticians.

The main conclusion arrived at is that there is sufficient training capacity at all levels and in all linguistic regions. This conclusion is supported by anecdotal reports of unemployed statistics graduates in all three linguistic regions covered.

The Arabic speaking region was not covered in the same detail as the others because of the lack of data on the demand side and the current situation in the region.

Although there is sufficient training capacity, the quality of training is not everywhere at the desired level. Issues concerning trainer skills, information technology and the ability of training institutes to understand their costs have been noted about various institutes.

The second main conclusion is that better statistics about statisticians are needed. The core data sources needed are:

- Training schools websites should report their numbers of students and graduates by course, by year and by gender. Some schools already do this. It is in the interests of these training institutes to do so, as it is a primary (and cheap) means of advertising.
- An all-African source of training institute information should be provided, perhaps by UNECA, with training institutes submitting key data, including data on inputs, online.
- On the demand for training side, the ideal situation would be for NSI annual reports on websites to provide detailed personnel information, including staff turnover: This would be an effective means of reporting on the public resources used to provide public statistics. Since some NSIs do not have the personnel systems needed to provide this level of reporting, this is a medium term objective.
- An immediate measure is to ensure that all NSDSs contain the personnel information required, including on staff turnover: This is a high priority requirement because without information about existing staff numbers and levels, it is not possible to plan capacity building actions at institutional level.
- Since NSDSs in principle cover the entire NSS, staff information should be provided about statisticians working outside the NSI. Nevertheless, this is not expected to be achieved easily.

The above proposals do not cover the means of estimating demand for training from users of statistics or from employers who need numerate staff but not necessarily statisticians. The first issue could be dealt with by a survey of the NSS, preferably linked to an NSDS. The second could be addressed by a survey of former students of statistics training institutes, for which specific funding would be required.

To make the best use of statistics training, accompanying measures are needed. The objective of these measures is to address NSI management of the process of training, learning, applying knowledge and change management. The first step for demanders of training is to analyse its impact. Did it match what was expected? Were the courses appropriate? What alternatives exist?

The focus of any capacity building programme at training centres should be on improving training skills, management knowledge and equipment. In particular, there is a need to understand and address the structure of training costs and to address training institute financial stability by financial analysis. Support should be provided for curriculum change, which is a gross cost to trainers and therefore should be done in a harmonised fashion.