Current situation of animal identification and recording systems in developing countries and countries with economies in transition

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Abstract

Animal identification and recording have a critical role to play in enhancing food security and rural development, particularly in the poor countries of the world. A survey was conducted to assess the current status of animal identification and recording (AI&R) systems in 23 developing countries and 10 countries with economies in transition. The survey showed wide variation of AI&R systems among countries, within and across regions. Different AI&R systems, addressing various needs, exist in these countries. Most of the countries (87%) indicated that they have animal identification systems in place, which, for the large majority (76%), serve as a means to control animal diseases. Other uses of AI&R are traceability (65.5%) and performance recording (51.7%). The majority of AI&R systems (53.1%) cater for cattle/buffaloes only. In 15.6% of the countries, all livestock are identified and recorded. Most AI&R systems developed for disease control and traceability are fully funded by government, generally with donor support. Government and farmers share the costs of most performance recording systems; also with donor subsidies. Pedigree recording systems are financed by government and breed societies. Most AI&R systems (61.4%) are administered by government; private organisations, research institutions and universities run 20.5%, 9.1% and 6.8 %, respectively.

Keywords: Identification, registration, performance recording, traceability.

1.0 Introduction

The socio-economic importance of livestock in the poor countries of the world cannot be over-emphasised. Globally, the livestock sector contributes 40% of agricultural domestic product (GDP), employs 1.3 billion people and creates livelihoods for 1 billion (70%) of the world's poor (Steinfeld *et al.*, 2006). As a result of population growth, urbanization and changing food preferences, the demand for livestock products is increasing rapidly and this trend is expected to continue into the foreseeable future. Whereas only marginal increases in consumption of meat and milk are expected in the developed world, increases of 114 % and 133 % respectively are projected until the year 2020 for meat and milk consumption in the developing world (Delgado *et al.*, 1999). Furthermore, there is a great challenge to alleviate poverty in developing countries by producing more and safe food, especially of animal origin, against a shrinking animal genetic diversity and increased global trade (Philipsson and Okeyo, 2006).

There is therefore a pressing need for increased output of food of animal origin in the poor countries of the world. In some developing regions, e.g. Sub-Saharan Africa, higher output from livestock production

has been achieved by increases in animal numbers than by improved productivity. However, the increasing trend towards intensification and industrialisation of livestock production occurring in most developing regions (Steinfeld *et al.*, 2006) is placing unprecedented pressure on existing resources; hence future emphasis will have to concentrate on greater efficiency in terms of output per animal and per unit of land. Animal performance recording, monitoring and evaluation are key to better herd and flock management and, thus, to increased efficiency.

Efficient utilisation of animal genetic resources in developing countries is also key to meeting future demands for food to improve the livelihood of poor people. About 70% of the world's livestock breeds are found in the tropical developing world (Philipsson and Okeyo, 2006). It is essential to characterize these breeds so as to develop an awareness of their roles and values, followed by programmes to improve and conserve them. Animal identification and recording systems are vital to the achievement of all this.

Animal identification and recording potentially have a big role to play in preserving the rich animal genetic resources in developing countries through disease control. A sound AI&R system, particularly when linked with a traceability system, helps countries to put in place measures such as surveillance, early detection and notification of outbreaks, rapid response, control of animal movements, and zoning or compartmentalisation. Furthermore, past food scares such as those caused by bovine spongiform encephalopathy (BSE), and foot and mouth disease (FMD) outbreaks, in addition to emerging diseases caused by climate change have heightened concerns about food safety and the need to trace farm products from "farm to fork". Traceability systems used to identify animals, monitor their movements, and trace animal products have evolved considerably, largely due to the requirement by large trading blocks (the EU in particular) to have all animals traceable. Developing countries and countries with economies in transition that are exporting or wish to export animal products to the EU, USA or Japan have no choice but to fulfil these "world market" standards.

In many developing countries, the need to control stock theft has also given motivation to the implementation of AI&R schemes. In some countries in southern Africa, the problem is getting so bad that farmers are no longer willing to take the risk of keeping animals at all.

This paper presents preliminary results of work carried out by the ICAR task force for developing countries to assess the current state of AI&R programmes in developing countries and countries with economies in transition. Such information will allow the establishment of a database of current programmes and monitor them on regular basis, not only to document and learn from successes and failures but also to report on those at risk so that action could be timely taken. This forms part of an ongoing broad effort by ICAR and FAO to promote the establishment of sustainable AI&R systems in these countries.

2. Methodology

A survey was conducted, through a questionnaire, in 23 developing countries and 10 countries with economies in transition in Africa, Asia, Central and Eastern Europe and Latin America (see Table 1). The questionnaire was in the form of an excel spreadsheet, in order to facilitate subsequent data management and analysis. Columns in the spreadsheet were filled out for each programme in the country. Questions gathered information such as type of programme, status (running, being implemented/tested or planned), purpose(s), species recorded, participation options, administration and funding mechanisms. Persons involved in AI&R in the various countries were requested to fill out the questionnaires. Responses were received between September and November 2009.

Data were first summarised by using categorical variables (1, 2….) to denote different responses. Counts and percentages of the response variables were subsequently derived and are presented herein graphically.

Table 1. Regions and countries covered by survey.

Region	Countries
Latin America	Paraguay, Chile, Peru, Ecuador, Panama, Mexico, Colombia, Uruguay, Argentina, Costa Rica
Africa	Namibia, South Africa, Zimbabwe, Botswana, Kenya, Tanzania, Malawi, Zambia, Lesotho, Angola, Tunisia
East and Central Europe	Hungary, Serbia, Croatia, Macedonia, Moldova, Ukraine, Belarus, Russia, Armenia, Georgia
Asia	India, Malaysia

3. Results and discussion

Figure 1 shows t   he number of   countri es wi th iden tification, performance record ing or traceabilty systems, a s a perc entage of the   total numb er of countries surveyed. These   are systems that are currently running, are bein g implemented/tested or have concrete plans for implementation. A large major   ity of countrie s (87%) have identification systems. T   hese systems range from simple group/owner identifi   cation (e.g. bran ding) to st ate-of-the art electronic s ystems. A sign ificantly large n umber of t hese cou ntries (57.6%) h ave t raceability systems while 45.5% have performance recording systems. There is, ther efore, a substantia l number of AI&R systems (running, being implemented or planned) in most of these countries.

The pu rposes f or which an imal iden tification sy stems are put into   are de picted in Figure 2. Some ident ification systems se   rve mu ltiple pu rposes. M ost of th e iden tification sy stems (75.9%) are utilised for the control of animal diseases. Traceability and performance recording utilize a relatively smaller proportion of the existing identification systems (65.5% and 51.7% respectively).
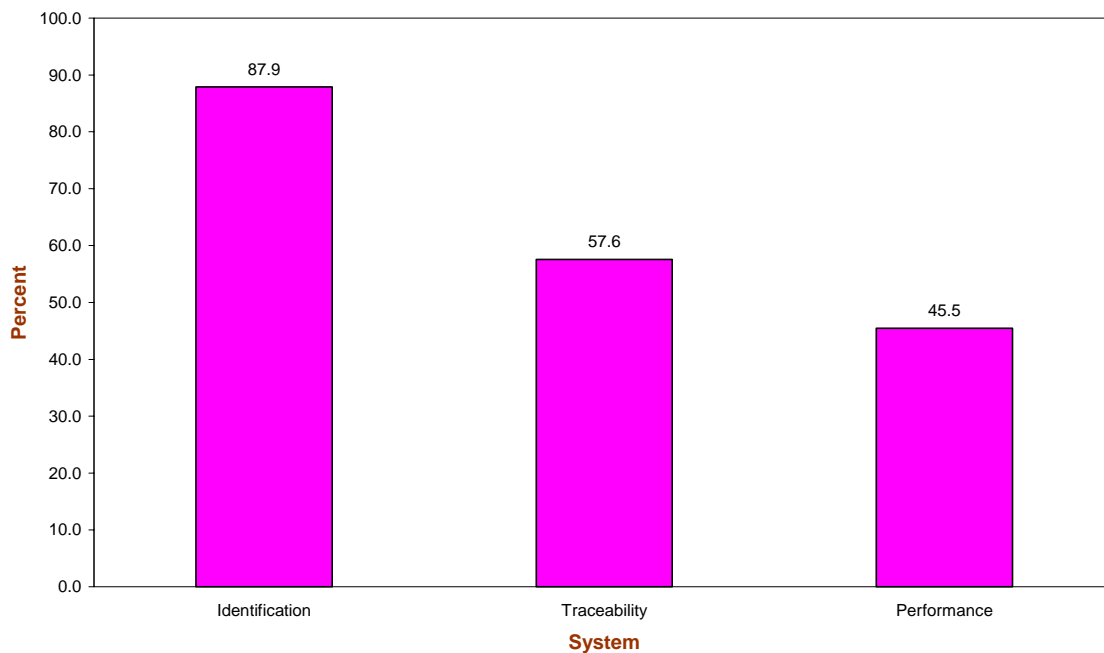

Figure 1. Percentages of countries with Identification, Traceability and Performance Recording Systems.
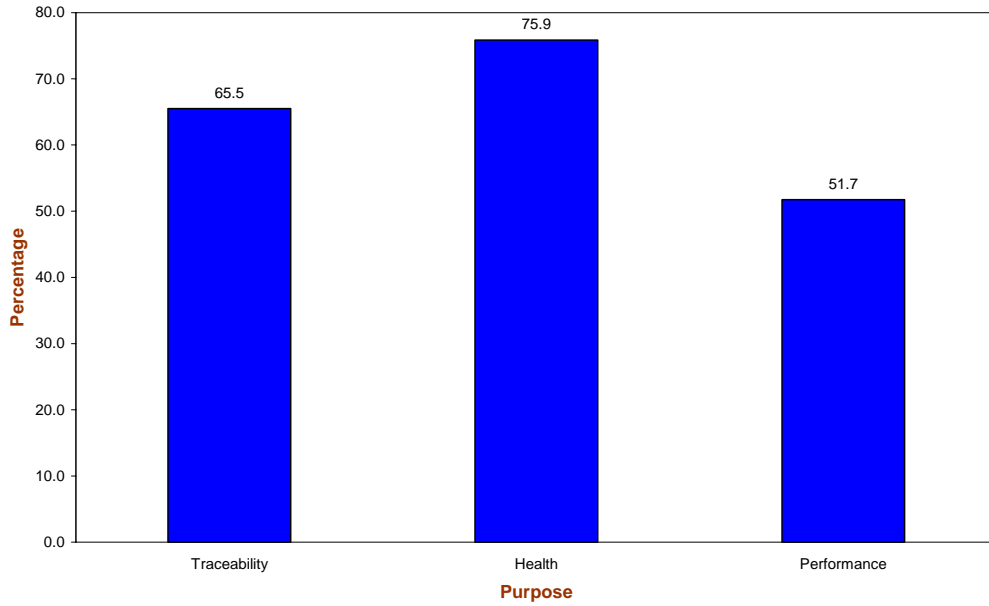
Figure 2. Purposes of Animal Identification Systems.

Subsequent analysis of the data was carried ou t to get an i ndication of sys tems that ar e currently running, compared to th ose that are planned and tho se being implemented. None of the co untries surveye d has performance record ing or traceability sy stems that are being implemented. A significant prop ortion of trac eability systems (42.1 %) have h owever been planned. O n t he other hand , onl y 16.7% of performance recording systems a re planned for implementation. Thi s shows tha t there i s, presently, much more i nterest i n setti ng up traceability systems compared to performanc e recording systems. The no n existence of systems in being implemented may, however, be an indication that many systems get planned but do not get to the impl ementation stage. Th ere is a n eed to mon itor the p lanned systems over time to see if they ever get implemented.
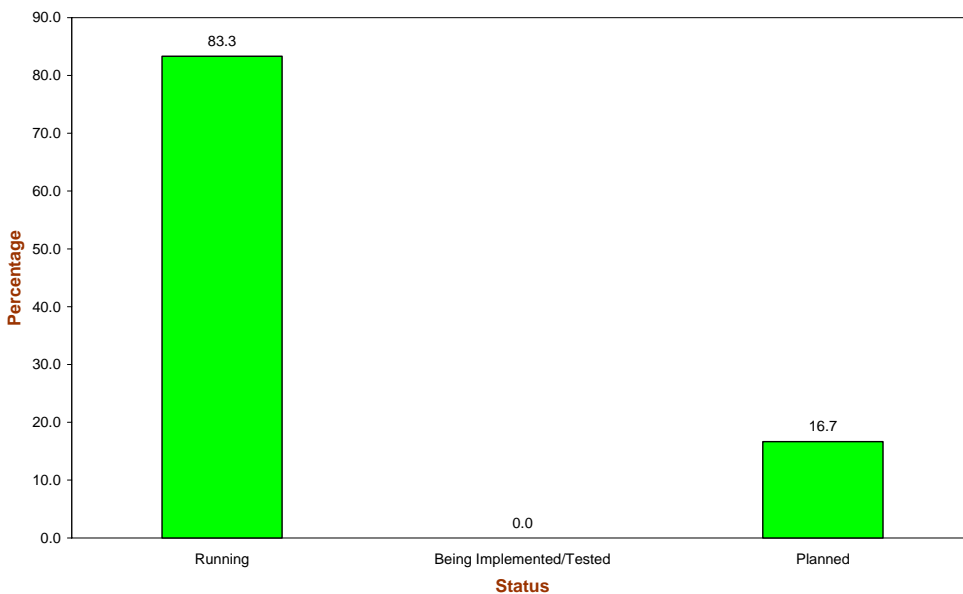

Figure 3. Status of Performance Recording Systems.

Fifty-eight per cent of A I&R systems in the countries surveyed are mandatory; the rest are voluntary. In general, systems developed for traceability or disease control are mandatory while performance recording systems are voluntary. Some countries (e.g. Namibia, Argentina, and Uruguay) have mandatory national identification and tracea bility systems. Other countri es (e.g. Zimbabwe) ha ve vol untary pri vately-run traceability systems primarily designed to enable market access.

The majori ty of A I&R sys tems (53. 1%) cater for cattl e/buffaloes onl y. All li vestock are i dentified and recorded under 15.6% of the systems. Dairy cattle AI&R programmes are by far the most popular ones, particularly where i mprovement of ani mal perfor mance i s the pri mary goal. There are, however, examples of A I&R programmes aimed at i mproving the performance of be ef cattle (Armenia, Argentina, Botswana, South Africa, Namibia and Uruguay), sheep (Bel arus, Croatia, Georgia, Namibia, South Africa, Perú and Ur uguay), horses (Argenti na, Nami bia, Perú and Ur uguay), pigs (Argenti na, South Afr ica, and Zimbabwe), buffaloes (India) and camelids (Perú).
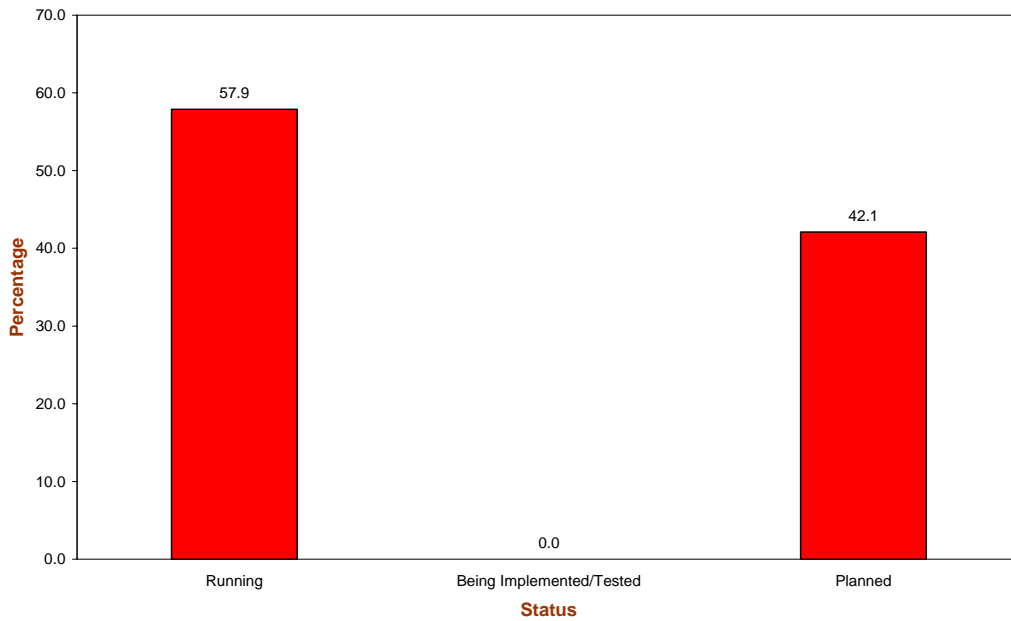

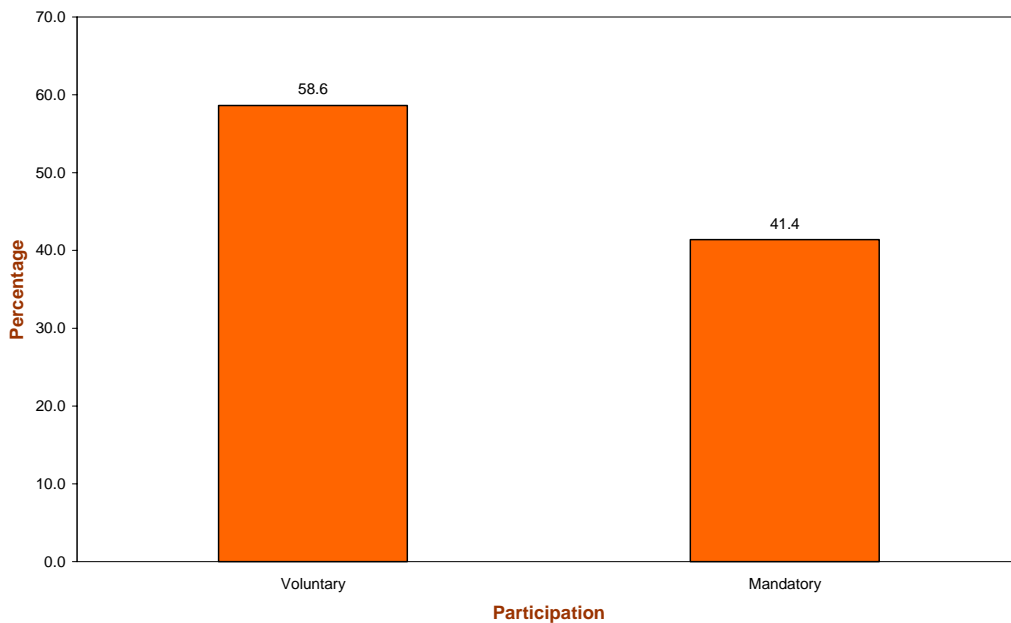*Figure 4. Status of Traceability Systems.*

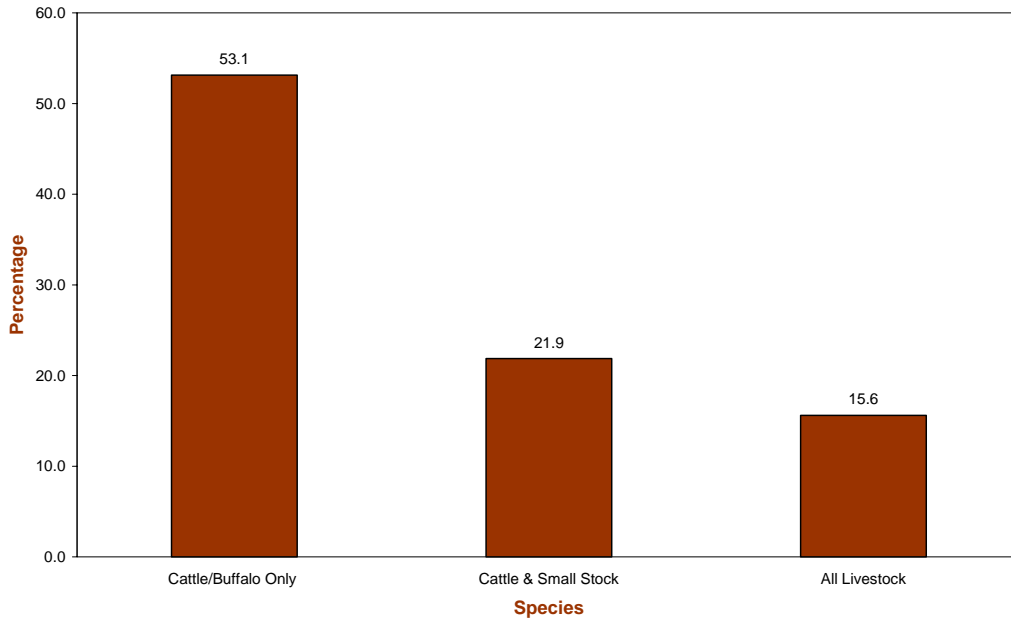*Figure 6. Participation in I&R system.*

Figure 6. Species participating in I&R systems.

A primary objective of the study was t o look at the way the vari ous AI&R systems are administered and funded. These are highly important factors influencing programme sustainability. An understanding of the relationship between these factors and system sustai nability may help to devel op models for sustai nable AI&R systems in developing countries. Government contri butes in fundi ng nearly 70% of the systems; it fully pays for 37. 1% of these. The latter mainly comprise systems of nati onal importance, such as those developed for traceability and disease control. System users (farmers) pay the full costs in 25.7% of the programmes and these are mai nly p erformance and pe digree recordi ng systems. The contri bution of donors is m arginal a nd they ma inly provide s upplementary fu nding. M ost I &R s ystems (61.4%) a re administered by govern ment; pri vate organi sations, research i nstitutions and uni versities run 20.5%, 9.1% and 6.8 %, respectively.

Further surveys wi ll be conducted that will seek to co llect information on so me sustainability indi cators. Analysis and monitoring of these indicators *vis a vis* the different funding and administration methods will help in the development of guidelines for sustainable AI&R systems in developing countries.
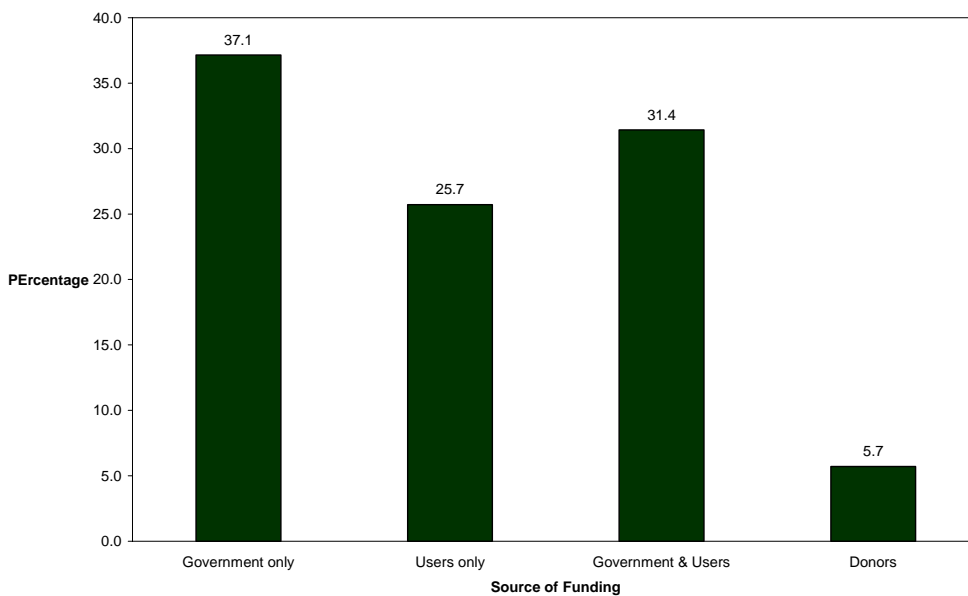

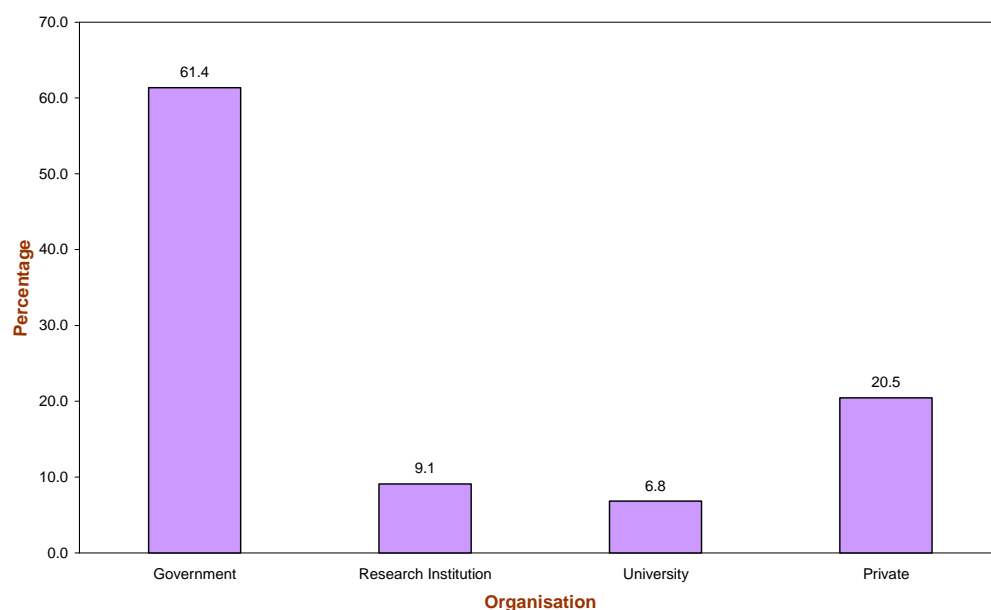
Figure 7. Funding of systems.

Figure 8. Implementing organisations.

4. Conclusions

The study provides a quick picture of the current situation of AI&R systems in developing countries and countries in transition. There are various AI&R systems in the different regions and countries, serving different purposes and funded and administered in different ways. Government, however, plays a central role in the running of most of these systems, particularly those of national importance. There is a growing interest in setting up new AI&R systems as indicated by the high number of systems that have been planned but not yet implemented. Consistent monitoring of existing systems will provide practical lessons on how to implement sustainable AI&R systems in the developing world.

5. References

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