

Compendium of statistical notes for the Open Working Group on Sustainable Development Goals (OWG)

Prepared by
United Nations Statistics Division, in collaboration with the Friends of the Chair
group on broader measures of progress

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Acronyms of Organizations who Contributed to Statistical Notes

DESA/DSD	Division of Sustainable Development of the Department of Economic and Social Affairs
DPKO	Department of Peace Keeping Operations
Eurostat	Statistical Office of the European Union
FAO	Food and Agriculture Organization
ILO	International Labour Organization
ITU	International Telecommunication Union
OECD	Organization for Economic Cooperation and Development
OHCHR	Office of the High Commissioner for Human Rights
PARIS21	Partnership in Statistics for Development in the 21st Century
PBSO	United Nations Peace Building Support Office
RoLU/EOSG	Rule of Law Unit at the Executive Office of the Secretary General
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UN-DESA	United Nations Division for Economic and Social Affairs
UNECE	United Nations Economic Commission of Europe
UNEP	United Nations Environmental Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Education, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNISDR	UN Office for Disaster Risk Reduction
UNODC	United Nations Office on Drugs and Crime
UNPD	United Nations Population Division
UN Women	UN organization dedicated to gender equality and the empowerment of women
WFP	United Nations World Food Programme
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization

Introduction

0.1 This compendium contains 29 statistical notes as input to the deliberations of the Open Working Group on Sustainable Development Goals (OWG). They provide information on the measurement aspects of the 29 issues discussed by the OWG during its first eight sessions. Earlier versions of these notes had been provided to many of the sessions.

Background

0.2 The Open Working Group on Sustainable Development Goals of the United Nations General Assembly (OWG) has been conducting a series of stock-taking sessions from March 2013 to February 2014 in which 29 issues were discussed. For each of the issues, the Technical Support Team (TST) under the umbrella of the UN System Task Team (UNTT) (which supports system-wide preparations for the post-2015 development agenda and consists of over 60 UN entities and agencies and international organizations) has been preparing an issue brief.

Initiative and mandate

0.3 The OWG Co-Chairs accepted the offer by the United Nations Statistics Division/Department of Economic and Social Affairs (UNSD) to provide statistical notes to all issue briefs. This initiative was supported by the fourth session of the OWG.¹

0.4 UNSD made this offer as the secretariat of the United Nations Statistical Commission (UNSC) which is the apex entity of the global statistical system and the intergovernmental focal point for the elaboration and the review of the indicators used in the United Nations system as indicated by Resolution A/RES/57/270 B of the General Assembly in 2003.

0.5 In this initiative UNSD was supported by the UNSC Friends of the Chair group on broader measures of progress (FOC) which has been mandated by the UNSC “to closely monitor the ongoing debate on development frameworks and to keep the Bureau of the Statistical Commission informed, undertaking an active dialogue with United Nations bodies and the policy sphere in order to ensure that a robust statistical measurement approach is incorporated from the outset in preparations for the post-2015 development agenda.” As part of this active dialogue, the FOC has been participating in the preparation of the statistical notes to the issue briefs.

¹ See the “Concluding Remarks of Co-Chairs”, tenth bullet, second sub-bullet:
<http://sustainabledevelopment.un.org/content/documents/3693cochairsconcluding.pdf>.

Purpose and contents

0.6 The statistical notes provide the OWG with statistical background information on what data is or could be available to monitor possible goals and targets in the areas covered by the respective issue briefs, describing methodologies, data availability, data sources, challenges and limitations. The statistical notes also raise awareness for the need to consider statistical aspects (and to involve statisticians) in the design of the SDGs and the post-2015 development framework.

0.7 The individual issue briefs determine the scope of the respective statistical note. In general, all statistical notes follow the same structure and provide certain types of information as indicated in Box 0.1.

Box 0.1: Template for the statistical notes

This template aims to ensure that all statistical notes follow a similar structure and cover certain important aspects, as applicable. The statistical notes should be aligned with the respective issue brief, be written for a non-technical (although very knowledgeable) audience and be very succinct and short.

- 1) Main policy issues, potential goals and targets (based on analysis of HLP report and other reports)
 - Aligned with issue briefs
 - Point out linkages to other issues, the general policy framework or any relevant measurement framework, as applicable and appropriate
- 2) Conceptual and methodological tools
 - Availability
 - Gaps and what does it take to fill them
 - References
- 3) Existing and new indicators
 - What is out there to build on?
 - Relevant MDG indicators
 - Relevant international indicator sets
 - Relevant monitoring frameworks (with goals, targets and/or indicators)
 - Need for new indicators
 - References
- 4) Data requirements, challenges and limitations
 - Data availability (spatial, temporal and thematic coverage, data quality, disaggregation) and data sources
 - International
 - National
 - Data gaps and what does it take to fill them; Feasibility and resource requirements
 - References
- 5) Conclusions

0.8 The statistical notes aim at providing a comprehensive and neutral picture of the statistical possibilities of measuring and monitoring the main issues identified in the issue briefs. It is not the purpose of the statistical notes to recommend individual or particular sets of indicators (or goals and targets).

0.9 The statistical notes provide the basis for any further statistical input that might be required during the process towards the post-2015 development agenda. Furthermore, they provide a first input to the establishment of a monitoring framework for the SDGs/post-2015 development agenda.

Inclusive and cooperative drafting and review process

0.10 UNSD has been organising the preparation of the statistical notes, with the active involvement of the FOC on broader measures of progress. All members (and observers) of the FOC, all international organizations that are members of the Committee for the Coordination of Statistical Activities (CCSA) as well as the Technical Support Team (TST) co-leads of the various issue briefs were invited to contribute their statistical expertise in the drafting of the statistical notes. A work plan containing the list of issues as well as information about the purpose of the statistical notes and the drafting and review process had been developed and shared with these groups.

0.11 Many FOC member countries and international organizations participated in the drafting process. The participation ranged from the provision of references on data sources to being the lead author on a particular statistical note. The drafting was conducted in the spirit of cooperation, seeking the inclusion of all relevant inputs.

0.12 The first drafts were submitted to the FOC for review. During the review process over 90 comments on individual notes were received, meaning that on average each of the 29 notes were reviewed by 3 FOC members. Based on the comments received, the first drafts were updated and circulated for final review to the members of the FOC, the members of the Committee for the Coordination of Statistical Activities (CCSA) and the Technical Support Team (TST) co-leads of the various issue briefs. In addition, the statistical notes were provided to the 45th session of the UNSC (4-7 March 2014) as a background document. The statistical notes were finalized in March 2014.

Submission of the statistical notes to the OWG

0.13 Starting from the fifth session of the OWG in November 2013, first drafts of statistical notes were provided to the OWG by the time the respective issue was discussed by the OWG, although this could not be achieved in all cases. First drafts of statistical notes on issues discussed in earlier OWG sessions were provided to the OWG as they became available. The statistical notes were posted alongside the issue briefs on the website dedicated to the OWG.²

² See <http://sustainabledevelopment.un.org/index.php?menu=1549>. The statistical notes are posted alongside the issue briefs under the individual sessions.

0.14 The package of the 29 updated and finalized statistical notes has been transmitted by the Chair of the Statistical Commission to the OWG as an input to its deliberations in March 2014. The statistical notes might be revisited and revised, or further elaborated as required as the process towards a post-2015 monitoring framework progresses.

Statistical note 1:

Conceptual Issues¹

1.1 This statistical note identifies the conceptual issues, raised in the issue brief, that appear relevant from a measurement perspective, in particular for setting targets, selecting indicators and implementing a monitoring framework. This note will discuss these issues in terms of conceptual and methodological considerations and data requirements.²

Main policy issues, potential goals and targets

1.2 The following five conceptual issues were identified as having particular relevance from a measurement perspective:

- a. Universality. The SDGs and post-2015 goals constitute a global agenda that aspires to be universally applicable to all countries, while taking into account different national circumstances, capacities and priorities. However, individual goals affect countries in different ways and to different degrees, leading to different priorities. Also, even if priorities are shared, the starting positions and capabilities of countries are very different in respect to specific goals and targets. Of a particular concern are the needs of countries in special situations (African countries, Least Developed Countries (LDCs), Landlocked Developing Countries (LLDCs), Small Islands Developing States (SIDS) and the Middle-Income Countries (MICs)) and states affected by conflict.
- b. Inclusiveness. The post-2015 development agenda aspires to be people-centred and to leave no individual person or group behind, addressing issues such as lack of jobs, insufficient social protection, inequalities and exclusion. Also, no country should be left behind, such as countries in special situations and countries affected by conflict. Inequalities within and between countries should be measured and reduced.³
- c. Scope of the development agenda. The post-2015 development agenda will cover the three dimensions of sustainable development, namely economic, social and environmental, while taking into account cross-cutting issues such as peace and security, governance, human rights, the empowerment of women, and inequality. This is a very significant expansion of scope as compared to that of the MDGs.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Germany, OECD, Paris21 and WTO.

² While the statistical notes are largely self-contained, i.e. can be read on their own, they assume familiarity with the issues discussed in the respective issue brief or the issue brief itself, which determine their scope and to which the statistical notes form an annex.

³ Inclusiveness, in particular when referring to countries is closely linked to the universality. However, they are not the same. Universality aims to ensure that goals are equally shared, while inclusiveness aims to ensure that goals are equally achieved by all countries.

- d. Inter-linkages and cross cutting issues. There are many goals that affect different dimensions of sustainable development simultaneously. For example, goals with respect to food, water and energy need to consider human development outcomes and environmental sustainability at the same time. Cross-cutting issues such as peace and security, governance, human rights, woman empowerment, etc. affect the achievement of goals in all three dimensions of sustainable development.
- e. Means vs. ends and focus on meaningful outcomes.⁴ Both the outcomes and the drivers of change should be addressed in an integrative or systemic approach to gain insight into the results and causes of change. While some have criticized the MDGs' emphasis on ends for leading to the neglect of the structural causes of problems such as poverty, inequalities and hunger, others view the focus of global monitoring on a limited number of outcomes as a strength. In fact, in some areas such as education, the MDGs focused on structural measures such as years of schooling, instead of actual learning outcomes such as the ability to read.

Conceptual and methodological considerations, existing and new indicators, data requirements, challenges and limitations

Universality

1.3 *Conceptual and methodological considerations.* Many goals within the post-2015 development agenda may require different or differentiated targets for different groups of countries, in order to account for the heterogeneity in their circumstances, initial conditions and priorities. In particular, the quantification of targets may need to consider different national circumstances and capabilities, so as to make targets equally ambitious and achievable for all countries. National targets should reflect the gap between current conditions and the target to be achieved, and their monitoring should be based on sound methods to measure these gaps.⁵ It is suggested that statisticians be involved in this task in order to bring in their expertise in target setting and indicator selection, as well as their experience in MDG monitoring and other monitoring efforts.

1.4 *Existing and new indicators, data requirements, challenges and limitations.* If an issue is relevant for a particular country, the country has an inherent interest in allocating resources for its measurement. National decision makers are interested in timely, consistent, disaggregated, and country- and area-specific information. However, in practise, data are missing even in priority areas of countries, requiring domestic and international investment in capacity building efforts.⁶ In this context, it is important to address possible trade-offs between indicators that are relevant for global monitoring purposes and indicators that are

⁴ The terms 'ends' and 'outcomes' are used interchangeably in this note.

⁵ One might want to consider absolute or relative differences, or time-related measures, e.g. number of years needed to reach those targets.

⁶ The financing of these investments should be addressed as part of the discussion on the means of implementation of the post-2015 agenda.

most pertinent from a country's perspective, as it impacts, for instance, the allocation of statistical capacity development efforts. Overall, the challenge of statisticians is to identify indicators that are relevant to, and can be compiled by, practically all countries.

Inclusiveness

1.5 *Conceptual and methodological considerations.* If no person or group within any country is to be left behind, then their situation should be monitored through highly disaggregated data, including by age, gender, disability conditions, geography, etc.⁷ Targets have to be formulated to reflect their achievement for all population groups, meaning that national averages will need to be supplemented with information about different population groups. Inclusiveness of the post-2015 monitoring framework with respect to all countries has to be ensured in the design of goals and targets, but also in the implementation of the monitoring framework. Regarding the design of the development agenda, targets will need to be differentiated according to the different situation of countries. Regarding implementation, regional aggregates (averages) that are strongly influenced by the largest countries could be complemented with measures of achievement across individual countries, such as the number of countries that made significant progress. Furthermore, results might also need to be differentiated by country groupings.

1.6 *Existing and new indicators, data requirements, challenges and limitations.* The required disaggregation of statistical indicators by age, gender, geography, income, disability etc. is currently not available for many statistical areas. However, in many administrative data sources, such as vital registration, some of the parameters such as age and gender are part of the original microdata sets. Also location information may frequently be either part of the dataset or its metadata. On the other hand, such parameters can be easily included in surveys, although representativeness in respect to them will require increased sample sizes (thereby significantly increasing the costs). In particular the data collection for countries in special situations and countries affected by conflict will require strong efforts as the abovementioned data sources are frequently not available.

Scope of the development agenda

1.7 *Conceptual and methodological considerations.* The dimensions of sustainable development in terms of data availability have been ranked as follows: Economic statistics – GOLD, Social statistics – SILVER, Environment statistics – BRONZE, Governance statistics – TIN.⁸ Significant work would be needed to provide the full-range of statistics required to cover the goals and targets indicated in the report of the High-Level Panel of Eminent

⁷ It has been suggested that a few cross-classification variables should be included in all sources. In general, some breakdowns (age, gender, education) are easier to implement than others (income, disability).

⁸ See *Examining data needs -- perspectives and assessments*, Peter Harper (Australian Bureau of Statistics), presentation at the Open Working Group informal meeting on measuring progress, 17 December 2013, New York (http://unstats.un.org/unsd/Dissemination/workshops/OWG_2013/default.html).

Persons (HLP Report)⁹ and the report of the Sustainable Development Solution Network (SDSN)¹⁰, even for countries with well-developed statistical systems.¹¹ In some areas, such as governance, statistical work on concepts and definitions, methods, etc. has to be undertaken. In other areas (e.g., mental health), statistical frameworks exist but the instruments to collect quality-information still need to be developed. Further, in some areas the quality of the existing statistical sources is lacking with respect to frequency, timeliness, comparability, etc. In this context, the potential of existing, emerging and new data sources (administrative records, big data, etc.) will have to be examined.

1.8 *Existing and new indicators, data requirements, challenges and limitations.* There are a large number of international, regional and national initiatives which have implemented or propose indicators sets that aspire to measure sustainable development and human well-being in a comprehensive way.¹² However, those will need to be assessed as to whether they are feasible from a measurement perspective, cover sustainable development at the global level, and reflect issues such as human rights and peace and security. The main challenge is that the required capacity to measure the full range of sustainable development indicators currently does not exist in most countries. Even for the MDGs many countries can only provide data for some of the indicators. Adequate capacity building efforts, with the focus on strengthening national capacity in priority areas will be required.

Inter-linkages and cross cutting issues

1.9 *Conceptual and methodological considerations.* The explicit objective of the sustainable development agenda is to address inter-linkages and the relationship between targets. For example, economic growth should de-couple from the use of natural resources. The case of a target of one goal adversely affecting the achievement of another goal should be avoided. Also redundancies where different targets or indicators measure the same or closely related phenomena should be equally avoided. The task for statisticians will be to support the design of a set of targets and to identify indicators that constitute a coherent information- and monitoring system which effectively recognizes inter-linkages between indicators and across targets.¹³ It will be a decision on the policy level on how to address cross-cutting issues. From a statistical perspective, there may be a preference for indicators under a specific cross-cutting goal such as governance than governance indicators under different goals, as this might better ensure the coherence of the indicators and facilitate the analysis of the issue. To do both for one goal may create confusion.

⁹ High-Level Panel of Eminent Persons on the Post-2015 Development Agenda (HLP), “A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development”, May 2013.

¹⁰ Sustainable Development Solution Network (SDSN), An Action Agenda for Sustainable Development – Report for the UN Secretary General (6 June 2013).

¹¹ See *Report of the Friends of the Chair Group on broader measures of progress*, Forty-fifth session of the Statistical Commission, 2-7 March 2014 (E/CN.3/2014/4), para. 26.

¹² See background document to the 45th session of the United Nations Statistical Commission, 4-7 March 2014, entitled “Some national, regional and international efforts and practices in the measurement of sustainable development and human well-being” available at: <https://unstats.un.org/unsd/statcom/sc2014.htm>.

¹³ However, mapping out all the relevant linkages is a task that belongs to analysts and model-builders rather than statisticians as linkages will vary across countries, issues, and time-periods, with different ‘theories’ stressing one link or another.

1.10 *Existing and new indicators, data requirements, challenges and limitations.* Statistics provides international standards for data compilation in most areas, standards for data integration and standards for data sharing. These standards allow the integration of data and the building of information systems for the analysis of inter-linkages. However, for several cross-cutting issues, such as human rights, governance, and peace and security, agreed statistical standards do not exist yet, and it will be necessary to invest in their conceptual development and implementation in countries, in a way that allows the integration with existing statistics.

Means vs. ends and meaningful outcomes

1.11 *Conceptual and methodological considerations.* The decision whether to measure means or ends (outcomes) depends on the purpose at hand. For the MDGs it was decided to focus on a limited number of outcome indicators to facilitate global monitoring and communication for policy makers. Additional indicators on means, which can identify the underlying causes, may be more suitable for national monitoring and programming, as the underlying causes may be country-specific and are subject to national policy-making. Identifying relevant indicators is a core task of statisticians, who should also take into account that the relevance of individual indicators might be changing over time. Measuring meaningful outcomes refers to the relevance of the indicator for the target and goal. In some areas work is under way to improve the outcome measures, e.g., in the case of education to reflect quality aspects.

1.12 *Existing and new indicators, data requirements, challenges and limitations.* The measurement of indicators of both means and ends (meaningful outcome indicators) will increase the costs and the capacity requirements in countries. Measuring means can be more costly and complex than measuring ends. The benefits of measuring both should be stressed and weighed against the cost.

Conclusions

1.13 The five conceptual issues discussed in this statistical note: universality, inclusiveness, broad scope of the agenda, inter-linkages/cross cutting issues, and means vs. ends/outcomes are crucial elements of the measurement framework of the post-2015 development agenda. This note points out some very important considerations from the measurement/statistical perspective with respect to these issues, reiterating the need to involve statisticians early on in the discussion so that their knowledge and their experiences from the monitoring of the MDGs and other monitoring efforts can inform the decision making process on goals, and in particular, on targets.

1.14 The new development agenda will increase the demand for data significantly, both in terms of scope and levels of detail (disaggregation). There is a need to fill existing data gaps, to improve data quality and to satisfy (at the same time) the dramatically increased data requirements. This will require significant capacity building efforts in countries and a partnership for data development, involving all stakeholders. Adequate technical and financial support for building capacities should be planned for. It will also require the development and implementation of new methodologies, data sources and methods of data capture, integration and dissemination (big data, geospatial information, etc.) but also increased use of existing statistical tools such as measurement frameworks, household surveys, administrative sources, census/vital statistics registration, agricultural surveys, etc. Looking at these requirements, a data revolution has been called for, which would encompass all the above mentioned elements.

1.15 The core concern of statisticians with respect to the post-2015 development agenda is the *measurability* of goals and targets at national and global levels, as a prerequisite for accountability. As pointed out, measurability requires the availability of statistical concepts and definition, the identification of appropriate indicators, the selection of methods of measurement, and the development of data sources and statistical capacity for data collection. Measurability should be evaluated in terms of both current and potential data availability, and is subject to change. One of the important lessons learned from MDG monitoring is the importance of national ownership by considering national requirements, priorities and capacities, which will foster and support domestic efforts, hereby increasing measurability. Measurability will also depend to a large part on international support for building the required national capacity – the means of implementation available for statistics.

Statistical note 2:

Poverty Eradication¹

Main policy issues, potential goals and targets

2.1 While the MDG target on extreme poverty reduction has been met at the global level, there is considerable variability in poverty levels and progress across and within regions and countries, as well as between different population groups.

2.2 Vulnerability is also a persistent problem. The proportion of people living below the \$2 per day poverty line has changed by a much smaller degree than that of people living below the extreme poverty line of \$1.25 per day. While the number of people living on less than \$1.25 a day has fallen, the number of people living on less than \$2 a day has remained relatively stable and the number living on between \$1.25 and \$2 a day has increased. Large numbers of people remain perilously close to falling into poverty. Should they experience shocks, they are unable to cope with. For the poor, a shock of even a relatively short duration can have long-term adverse consequences.

2.3 Income alone presents only a partial picture of poverty. Poverty eradication must jointly target multiple deprivations, including those related to health, education, food security, nutrition, employment, empowerment and personal security. Nonetheless, this statistical note retains a focus on income poverty, since there are other issue briefs/statistical notes that deal with some of the non-income aspects of poverty.²

Conceptual and methodological tools

2.4 The key indicator for measuring income poverty is the number (proportion) of people below the poverty line, also known as the headcount (ratio). An absolute poverty line can be understood as the cut-off point for income, below which people are considered to be too poor to afford a nationally defined basic basket of necessities – principally enough food to satisfy a recommended minimum caloric intake, as well as other necessities such as clothing and shelter. Different methods have been used to define absolute poverty lines (see Deaton 1997) and national poverty lines will be different for different countries given their particular realities and norms of what is a minimum level of well-being.³ This means that while national poverty lines may be the most relevant for national policy making, poverty rates assessed with respect to one country's benchmark may not be directly comparable to another's.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Switzerland, Eurostat, United Kingdom, United States of America, Germany, France, Cameroon, OECD, and the World Bank.

² See other Statistical Notes including on Education, Gender Equality and Health.

³ It should be noted that the use of "relative" poverty measures (for instance, 50% of median income) is also common, especially in more developed countries.

2.5 Global poverty lines are useful for international comparability. For example, the international *extreme poverty* line has been set at \$1.25 (previously \$1.00)⁴ a day, measured at 2005 international prices adjusted for purchasing power parity (PPP)⁵. This measure, corresponding to the average poverty line in some of the poorest countries, is used to measure global progress towards the MDG target of reducing poverty by half.

2.6 The estimation of national and international poverty rates is done on the basis of nationally representative household surveys, from which income poverty can be measured through income or consumption. In developing countries it is often not possible to accurately measure income.⁶ Measuring consumption is then the alternative used, as it provides accurate information on how well households are actually able to meet their basic needs and includes consumption from own production which can be a significant component of the consumption of rural households.⁷

2.7 Household sample surveys are well understood and statistically sound instruments for collecting data but they are not without their limitations. Not all surveys are comparable in terms of design and sampling methodology, hence the quality and accuracy of the data estimations can vary given these differences. Furthermore, they tend to be expensive and are therefore undertaken relatively infrequently in most countries. Representative and comparable national household surveys are becoming more common and regular, but there are still regions where these surveys are rarely conducted.⁸

Existing and new indicators

2.8 In terms of existing indicators and monitoring frameworks for poverty eradication, the current MDG framework is still the most relevant. Within the MDG framework, progress on poverty eradication is measured under Goal 1 (Eradicate extreme poverty and hunger). Many of the structural factors that contribute to perpetuating poverty, such as lack of education and health, are addressed through other MDGs.

2.9 Goal 1 of the MDGs comprises Target 1.A (Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day) and progress towards this target is measured through the following three indicators:

⁴ The original \$1.08 dollar a day line (expressed in 1993 PPP) was developed by the World Bank based on a compilation of national lines for only 22 developing countries, mostly from academic studies in the 1980s. Since then more countries have developed poverty lines and additional information is available, allowing for a revision of the international poverty line to \$1.25 a day which is the average poverty line for the poorest 15 countries in the data set used by Ravallion, Chen and Sangraula (RCS) in 2009.

⁵ The PPP conversion factor is the rate at which the currency of one country would have to be converted into that of another country to buy the same amount of goods and services in each country. (IMF)

⁶ This may also apply to developed countries. While the Canberra 2011 *Handbook on Household Income Statistics* provides international guidance on how to measure household income in surveys, this cannot be easily implemented in surveys whose primary purpose is to measure aspects other than income.

⁷ For further discussion see PovcalNet Methodology Note and Handbook on Indicators for Monitoring the Millennium Development Goals.

⁸ PovcalNet, Data Availability table at: <http://iresearch.worldbank.org/PovcalNet/index.htm?4>. PovcalNet includes only household surveys that are available to the World Bank. In particular, for most countries in the Middle East and North Africa region, the issue is not lack of household surveys, but lack of access to household surveys.

- 1.1 Proportion of population below \$1.25 (PPP) per day
- 1.2 Poverty gap ratio, measuring the intensity of poverty by estimating the distance, on average, that the poor are below the poverty line
- 1.3 Share of poorest quintile in national consumption⁹

2.10 It is expected that indicator 1.1 will continue to be the principal measure through which poverty eradication efforts will be assessed. However, the post-2015 development framework may consider new indicators, for example, the proportion of population living on less than \$2 (PPP) a day. This indicator is relevant because the reductions in extreme poverty are vulnerable to reversals in case of shocks. Learning how many people are living just above the extreme poverty line could be very informative for policy making to reduce vulnerability and consolidate gains in poverty reduction.

2.11 There may also be room for formulating inequality measures within poverty reduction goals such as the current indicator 1.3.¹⁰ Other measures of inequality such as the 20:20 ratio (ratio of the richest 20 per cent's share of national income to the poorest 20 per cent's); the Palma ratio (ratio of the richest 10 per cent's share of national income to the poorest 40 per cent's); and the Gini coefficient can all be computed using existing sources of data.¹¹

Data requirements, challenges and limitations

2.12 Lack of sufficient disaggregation: The nationally representative household surveys that generate the data for poverty measurements can also produce estimates at lower geographical levels (such as regions, provinces).¹² But they tend to be less reliable, especially when producing estimates for different population groups such as those based on ethnicity or age. In addition, as the unit for data collection is the household, intra-household differences in consumption, such as that between men and women cannot be captured. There is a need to improve methods for household surveys so as to capture intra-household differences in poverty.

2.13 Establishing baseline data: For any monitoring effort, it is critically important to define the baseline data. This may be done by processing existing data, but it may sometimes require the collection of new data. While the data gathered for the MDG monitoring can provide the needed information at the global level, it will be also crucial to have national level baseline data. Fortunately, national data on poverty has become increasingly available in recent years.

⁹ The poorest quintiles' percentage share of national income or consumption is the share that accrues to the bottom fifth (quintile or 20%) of the population.

¹⁰ No global or regional data are available. Introducing inequality measures into SDGs requires careful thinking in terms of the estimation process and the most appropriate methodologies to be used.

¹¹ For more details see: Cobham and Sumner, March 2013. "Putting the Gini back in the bottle? 'The Palma' as a policy-relevant measure of inequality" mimeo at <http://www.kcl.ac.uk/aboutkings/worldwide/initiatives/global/intdev/people/Sumner/Cobham-Sumner-15March2013.pdf>

¹² Some countries have reliable subnational poverty data. But estimating such statistics for all (or most) countries in the developing world is still a long term goal. In addition, subnational data are typically country-specific, so comparisons between countries are not usually appropriate. Subnational data are useful for country monitoring and analysis, but less useful for global or regional monitoring.

2.14 Frequency of data available: Household surveys are typically done every 3-5 years in developing countries. However, the regularity and frequency of surveys conducted vary greatly among countries.¹³ It is important to encourage and support countries to conduct household surveys regularly for consistent monitoring.

2.15 Need for greater linkages between data sources: It is advisable that household survey data be complemented with other sources of data such as administrative records, tax records and macro statistics such as National Accounts Data, depending on the variables of interest. In developing countries, administrative data are not always consistently collected, neither considered as sources of statistics which could guide policy formulation.¹⁴

2.16 In summary, measuring poverty continues to be a challenge in many countries. The availability, frequency and quality of poverty data for monitoring remain low, especially in small states and in countries and territories in fragile situations.¹⁵ Further support for statistical capacity building will be needed to meet the demand for new indicators.

Conclusions

2.17 The existing set of MDG indicators on income poverty, hunger, nutrition, basic education, gender equality, health and the environment can serve as a core set of indicators on poverty, but will need to be refined to address explicitly their relationship to poverty eradication and to be more relevant to a broader, more complex development agenda.

2.18 For example, changes in current methodology may be needed if countries are to address pockets of poverty at sub-provincial levels or target specific population groups. Similarly, to consolidate progress in poverty reduction and address the effect that shocks can have on this progress, it will be important to have timely measures of vulnerability. Data from different sources can aid in these efforts, but they need to be validated against existing measures to establish consistency and relevance. These requirements need to be weighed against the capacity and resource needs of national statistic systems.

2.19 Finally, improving price data is crucial for improving poverty measurements. Income poverty measures can be distorted if proper price adjustments are not undertaken – for instance, many developing countries collect price data from big cities only, while many poor households are often located in remote and rural areas. To construct global and regional poverty measures, good estimates of purchasing power parities are needed, but currently these are only available for “benchmark” years. Consumer prices indices, national accounts aggregates and population estimates are also needed for global and regional poverty

¹³ See Povcal net <http://iresearch.worldbank.org/PovcalNet/index.htm?4> for a summary of available household surveys by country

¹⁴ In addition, caution is needed when using administrative data in the context of poverty statistics in developing countries, where administrative records are often weak and scarce and they may produce misleading statistics as they may only cover the part of the population in the formal economy (i.e. insured or registered).

¹⁵ United Nations. 2013. The Millennium Development Goals Report 2013.

estimates, and their production is critical to improve the accuracy and timeliness of poverty estimate.

Statistical note 3:

Food Security and Nutrition¹

Main policy issues, potential goals and targets

3.1 Food security and nutrition are prominent themes in the debate surrounding the post-2015 development agenda. Emphasis is placed on their link with poverty, on one hand, and sustainability of food production and consumption patterns on the other. Much of the debate in the area revolves around the following three challenges, which are inter-related, complex in nature and multifaceted:

- Eradicating hunger
- Improving nutrition, especially of mothers and children
- Establishing more productive and sustainable food systems

3.2 This note discusses statistical aspects associated to measuring hunger and nutrition, leaving the issues related to the measurement of productivity and sustainability in agriculture to the statistical note specifically focused on sustainable agriculture.

3.3 One prevailing view is that eradicating hunger is possible within the next few decades, considering that the total availability of food at global level already appears to be sufficient to cover the dietary energy requirements of the world population. When compared with current trends in population growth, income distribution, and use of natural resources, however, it is clear that in order to eradicate hunger, addressing food availability will not be enough. There is an equally pressing need to adequately address food access issues. Inclusive economic growth and adequate social protection are two critical elements needed to improve food access. Heightened attention to sustainable food production is also needed, trends related to population growth and access to natural resources will continue to add demand pressures on world food supplies. Moreover, much greater attention to the quality of available food is needed, if, with hunger, we want to address other forms of malnutrition.

3.4 A meaningful target on hunger eradication could be based on an operational definition that considers “hunger” to be the outcome of severe and persistent food insecurity. In addition, eradication should be understood as reaching the lowest value of the prevalence of extreme food insecurity that can be feasibly and reliably measured. Consistently with a zero hunger vision, for example, targets for 2030 could be set at less than five per cent of the prevalence of undernourishment (the current MDG indicator 1.9) for all countries in the world, or at less than two per cent of the prevalence of severe food insecurity, measured through surveys using food insecurity experience scales.

¹ The following countries and organization contributed to the drafting and review of this statistical note: Botswana, United Kingdom, United States of America, UNESCAP, FAO and WFP.

3.5 Eradicating hunger, however, is not sufficient to ensure adequate nutrition for all. Improving nutrition requires the ability to choose and adopt healthy food consumption patterns, avoiding macro and micro-nutrient deficiency as well as excessive intake. Better nutrition also calls for sufficient access to adequate water and sanitation conditions and to proper education, along with diversified and nutrition-sensitive agricultural and food production systems. There is broad consensus on general targets for improved nutrition. Prevalent attention has been devoted to two major manifestations of malnutrition: stunting and obesity. A target of a 40 per cent reduction in the number of children under-five who are stunted, by 2025, and one of no increase in child overweight by 2020 were proposed by the WHO *Maternal, Infant and Young Child Comprehensive Implementation Plan* and endorsed by the World Health Assembly in 2012². In addition, the more ambitious target of zero stunted children under-two has recently been included in the *Zero Hunger Challenge* launched by UN Secretary-General. Focusing on stunting in children under two years of age is essential since the two first years of life constitute a window of opportunity for intervention.

3.6 To provide and maintain opportunities for adequate nutrition for all will also require increasing agricultural³ productivity in line with population growth. Increased agricultural productivity has historically been a stepping stone for promoting growth, development and economic diversification and specialization. Productivity gaps, however, still exist, especially for small-holders, in many regions of the world, and particularly in Africa.

Conceptual and methodological tools

3.7 There are a number of issues concerning the measurement of the first challenge, i.e. *eradicating hunger*, that are associated with the implicit definition of the term “hunger”. “Physiological hunger”, as the painful and discomforting condition associated with the amount of time elapsed since your last meal, is an individual experience which may be suffered occasionally by everyone. As such, it is rather difficult to assess and of little relevance per se. In practice, “hunger” has been associated both with insufficient access to food energy, one of its predominant causes, and with various forms of anthropometric failures (such as being underweight), one of the most common consequences.

3.8 The experience with monitoring the adequacy of dietary energy consumption has revealed the difficulty in obtaining reliable measures when the prevalence of people at risk of such inadequacy is very low, yet still far from zero. This is due to inherent and likely unsolvable difficulties in recording the distribution of habitual food consumption in a population at the necessary level of precision.

² See the World Health Assembly resolution 65.6 (2012)WHO

³ The term “agriculture” is used in broad sense to cover also forestry and fisheries.

3.9 Concerning the need to monitor progress in *improving nutrition*, two issues are worth mentioning. First, collecting data on nutritional status and nutrients' deficiencies is very complex and resource intensive, and requires the involvement of specialized personnel. Second, anthropometric failures may not necessarily be the consequence of inadequate levels of food intake. They may also be caused by other health conditions that make individuals unable to effectively use the energy and nutrient content of the food consumed. Monitoring nutritional outcomes alone may therefore prove insufficient to identify the specific causes of anthropometric failures and to guide policy interventions. This underlines the need to properly monitor food security and health conditions as well as the inputs into the nutritional process (such as, for example, the nutritional value of food and the quality of the diets) as an important prerequisite for adequate nutrition.

Existing and new indicators

3.10 One of the indicators currently used to monitor achievement of the MDG Goal 1 is the "prevalence of undernourishment". The indicator is defined as the proportion of population in a country for which the habitual level of dietary energy consumption is likely to be lower than the minimum energy requirement. FAO estimates are based on a probabilistic model of a representative consumer and are obtained using available data on countries' total food supply and on the distribution of food consumption across households.

3.11 Energy deficiency calculated from household surveys is also sometimes used in national MDG reports, and other reports that monitor progress on food security. A household is considered energy deficient if its aggregate caloric consumption falls below the minimum caloric intake requirement given the household's composition. Alternative measures of the extent of food poverty have sometimes been used by countries for producing national MDG reports. These measures are generally obtained with reference to a poverty line defined as the minimum cost of an adequate basket of food.

3.12 The other indicator used to monitor the hunger target of MDG 1, is the "prevalence of children under five that are underweight", estimated periodically by WHO and UNICEF as a proxy for the extent of hunger in the monitored countries.

3.13 Outside the MDG framework, experience-based food insecurity scales are routinely used in several countries in North and Latin America to monitor the extent of food insecurity. Self-reported data on relevant experiences are collected through surveys and used to calculate the prevalence of households with mild, moderate and severe food insecurity. The recently launched FAO project called "Voices of the Hungry" is currently being rolled out and tested with the intent to monitor the extent of moderate and severe food insecurity in a consistent and comparable way in more than 150 countries worldwide.

3.14 Progress towards *improving nutrition* is traditionally measured through anthropometric indicators and information on levels of nutrient intake and/or signs of deficiencies. Data on stunting, anaemia in women of reproductive age, reduction of low birth weight, childhood overweight and childhood wasting⁴, as proposed by the *Maternal, Infant and Young Child Comprehensive Implementation Plan*⁵ are among the indicators that can be used to assess the progress in this domain. Actions by WHO aimed at the *prevention and control of non-communicable diseases*⁶ also identified nutritional outcome indicators and health risk exposure indicators such as the prevalence of adult population consuming less than five total servings of fruit and vegetables per day.

3.15 Other important advances are being made to improve the rigor and reliability for measuring, monitoring and reporting food insecurity. WFP has developed a Consolidated Approach to Reporting Indicators of Food Insecurity (CARI). The approach and method utilizes household survey data and considers multiple dimensions of food security, including both current food consumption status, as well as coping capacity, as measured through economic vulnerability and asset depletion.

3.16 Another approach is to monitor the nutritional value of food and the quality of the diets, using either macro or micro data. From a macro perspective, indicators on the share of total calories derived from different food groups, or on the origin of protein supply in the total food supply, have been suggested as readily available measures to assess the quality of the overall food available at country level. Such indicators derived from the food balance sheets, however, may bear little relevance for the actual state of nutrition in a country where different groups of people have significantly different diets. Share of total calories derived from different food groups, can be calculated based on household or individual data. A commonly used indicator is the share of total calories from staples in the household; this indicator is used to better assess and understand the quality of overall food consumption.

3.17 Other indicators based on data collected at the individual level have been proposed and tested on a limited scale. These include various indexes of diet quality, based on the number of food groups in the typical diet, (e.g., the *women dietary diversity score* advocated by FAO, the minimum acceptable diet index for young children), frequency of consumption of various food, (e.g., the *food consumption score* used by WFP) or the difference between the quantity consumed and those recommended in nutrition guidelines (such as the *Healthy Eating Index* and the *Diet Quality Index*). The share of total calories on staples, household Dietary Diversity Score and WFP Food Consumption Score are proxy indicators for household food access; and have shown consistent association with calorie consumption.

⁴ Data are available at http://apps.who.int/gb/ebwha/pdf_files/WHA65/A65_11-en.pdf

⁵ See the World Health Assembly resolution 65.6 (2012)WHO

⁶ This was also endorsed in the same World Health Assembly resolution quoted above.

Data requirements, challenges and limitations

3.18 In order to obtain accurate estimates of the prevalence of undernourishment, data on both food availability and its distribution across households are needed. While an assessment of the total food supply is available for most countries in the world through food balance sheets, the lack of suitable data on food consumption from nationally representative samples of the populations poses significant challenges.

3.19 One challenge in improving the prevalence of undernourishment as a way of measuring progress towards hunger reduction is to obtain better food consumption data. Household surveys should distinguish food consumption from food acquisitions and purchases, and also collect information on quantity of own-produced foods consumed in the household, quantities of foods consumed away from home, and food that is wasted within the household and in own-production. The extent to which food available in the household is actually consumed by household members should also be measured. More generally, food consumption data should be available for sub-national areas and rural/urban contexts. In addition, questionnaires and data collection methods should be harmonized in order to ensure better international comparability of the derived indicators. Coverage and frequency of relevant household surveys should also be improved to allow timely food security monitoring.

3.20 Improving the quality and availability of data on the nutrient content of foods is another critical element, along with enhancements in data employed in estimating dietary energy requirements, such as those on height, weight and physical activity of the population. More frequent and regular Demographic and Health Surveys (DHSs) and/or Multi Indicators Cluster Surveys (MICSs) would also contribute to improving the assessment of progress toward reducing hunger.

3.21 Irrespective of all these efforts, a considerable cost is still foreseen in obtaining data of the necessary quality to yield reliable measures of hunger and malnutrition, as derivable from food consumption. On the contrary, the approach based on monitoring food insecurity through an experience-based indicator will entail substantial lower costs and improve timeliness.

3.22 Concerning progress towards *improving nutrition*, necessary steps to improve the information base are to increase the frequency of anthropometric surveys, and to promote stronger harmonization. Moreover, the representativeness of the samples should be increased, particularly for micronutrients deficiencies, whose data are sparse and missing in many countries. Improved food consumption surveys at household and individual level can also enhance the possibility of closely monitoring nutritional status, deficiencies, and the overall quality of the diets. As for the latter, indicators differ in terms of the type and detail of data required. Simple dietary diversity indexes are less demanding in terms of data needs. WFP is piloting the collection of dietary diversity related data (Food Consumption Score) using mobile phone technology. Simple dietary diversity indexes present some challenges related to

establishing criteria to compare measures obtained in different parts of the world. On the other hand, diet quality indexes based on levels of consumption and composition of food require detailed information on the quantity consumed by individuals, presenting additional challenges to those already described when discussing of the role of surveys to establish caloric adequacy. Better data collection in this area would also shed more light on food waste within households.

3.23 Finally, better estimates of food losses along production chains require a greater effort in terms of data collection through surveys at the national level, and enhanced analysis of existing information.

Conclusions

3.24 The Sustainable Development Goals (SDGs) are meant to establish a deeper and more comprehensive agenda than the MDGs, and they aim to meet wider challenges. A limited number of measurable indicators will need to be identified for monitoring progress, which should be able to capture the complexity of the challenges and their inter-related nature. This note introduces possible indicators that might be considered for the measurement of food security and nutrition in the context of the post-2015 development agenda.

3.25 National statistical systems are likely to face increasing demands in terms of collecting, processing and analyzing new data, while at the same time ensuring comparability with other countries. Since the SDG indicators are requested to ensure proper monitoring of inequalities not only across countries but also within countries, national statistical systems will also need to generate relevant information for sub-national areas and diverse population groups. This will mean an additional burden on countries that will have to increase the sample size of key household surveys. International organizations will have the responsibility of providing the necessary financial resources as well as supplying technical expertise, promoting harmonization and ensuring coherence.

Statistical Note 4:

Sustainable Agriculture¹

Main policy issues, potential goals and targets

4.1 The world's population is predicted to increase to 9 billion people by 2040. Some of the world's highest rates of population growth are predicted to occur in areas that are highly dependent on the agriculture sector and have high rates of food insecurity. Growth in the agriculture sector is one of the most effective means of reducing poverty and achieving food security. Innovative approaches are needed across the agriculture sector to increase productivity while at the same time to conserve natural resources and to use inputs sustainably and efficiently. Sustainability of production and commercial viability must be linked and should be measured. Such approaches will require the participation of smallholders, women, indigenous peoples and marginalized groups.

4.2 As the Millennium Development Goals (MDGs) draw to a conclusion, there is widespread consensus that new development processes must embody sustainability – not only with respect to natural resource use, but also in the context of social and economic dimensions, with governance playing a critical role in sustainable development.

4.3 In spite of attempts to date, a critical policy issue surrounding the formulation of goals, targets and indicators for sustainable food systems and agriculture in general is that countries have varying levels of capacities to fully achieve sustainable development and different priorities, based in part on their levels of development. A country may be fully committed to a sustainability agenda, but it may lack the necessary finance, resource endowments and technical know-how to attain sustainable development. In target setting, this issue needs to be taken into account.

4.4 The FAO has recently developed Strategic Objectives that focus on the policy issues related to sustainable development, with SO2 being of particular relevance to measuring and monitoring sustainable agriculture. The five FAO Strategic Objectives are:

- SO1. Contribute to the eradication of hunger, food insecurity and malnutrition;
- SO2. Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner;
- SO3. Reduce rural poverty;
- SO4. Enable more inclusive and efficient agricultural and food systems at local, national and international levels;
- SO5. Increase the resilience of livelihoods to threats and crises.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: France, Germany, United Kingdom, United States of America, Eurostat, FAO, OECD.

Conceptual and methodological tools

4.5 The collection and analysis of agricultural statistics has to the main part focused on agricultural productivity, food availability and structural statistics over the past century. Only in the recent past has attention started to be paid to the impact of agricultural production on the environment and the sustainability of agricultural activities.

4.6 The SEEA Central Framework adopted as international statistical standard by the United Nations Statistical Commission in 2012² and the SEEA Experimental Ecosystem Accounting welcomed by the Statistical Commission as “an important first step in the development of a statistical framework for ecosystem accounting”³ now provide countries with the methodologies to collect and develop their agricultural statistics and be in a position to monitor and evaluate the economic and environmental dimensions of agriculture. Linkages with socio-demographic information can be established through the System of National Accounts and spatially disaggregated information to be compiled in the context of the SEEA Experimental Ecosystem Accounting. The FAO is developing an extension to the SEEA that captures the specific relationships between the agricultural sector and the natural environment - System of Environmental-Economic Accounting for Agriculture (SEEA-AGRI). Within this framework, agriculture is interpreted in the broad sense as all activities related to crops, livestock, forestry and fisheries with a primary and intensive use of natural resources. The SEEA-AGRI will provide the framework for analysis of the interactions between agriculture and the environment and the ability to monitor and evaluate sustainability issues. The 2008 System of National Accounts provides the internationally statistical standard for the economic dimensions of sustainability. The broader social aspects of sustainability have to be addressed by household surveys, administrative sources such as those related to civil registration and vital statistics

Existing and new indicators

4.7 Within the current MDG framework sustainability is monitored under Goal 7 (Ensure environmental sustainability). Among the weaknesses of this set that have been pointed out are the lack of integration of the dimensions of sustainable development and the lack of inclusion of indicators addressing the necessary enabling conditions (including governance mechanisms, financing and capacity development).

4.8 The FAO has been working closely with the OECD and Eurostat in the development and convergence of agri-environmental statistics and indicators. The work with EUROSTAT and OECD has led to the development of a new Agri-Environmental dataset in FAOSTAT, which draws on data available in FAO and in part on the OECD database⁴. Moreover, some

² Statistical Commission – Report on the forty-third session (28 February-2 March 2012)

³ Statistical Commission – Report on the forty-fourth session (26 February-1 March 2013) <http://unstats.un.org/unsd/statcom/doc13/2013-Report-E.pdf>

⁴ <http://faostat.fao.org/site/674/default.aspx>

agri-environmental indicators such as nutrient balances⁵ are available only in the OECD data base and not in FAO, due to data limitation beyond the OECD member countries. These agri-environmental indicators were developed with a focus on developed country agri-environmental policy issues and need to be reviewed regarding their relevance to developing countries agri-environmental policy issues. The FAO is also using the following “dashboard” of indicators as a starting point to measuring and monitoring FAO’s Strategic Objective 2 “Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner.” This “dashboard” approach is being used as it is recognised that there are no one or two indicators that measure the necessary statistical dimensions of sustainable agriculture adequately. By way of example, a dashboard is presented below that comprises indicators that are already in existence and can be used to contrast increases agricultural production against sustainability trends, e.g. loss in forest area. Existing indicators on social injustice, equality and governance can also be added.

A. Production and growth:

1. Crops, net per capita production index number (including fibre)
2. Livestock net per capita production index number
3. Fish production per capita (tonne/cap) (both capture and aquaculture)
4. Round-wood production per capita (m³/cap)

B. Productivity:

5. Agriculture value-added per worker (constant 2,000 USD)
6. Cereals yield (hg/ha)
7. Growth in calories and protein produced per head of livestock
8. Growth in total factor productivity in agriculture⁶

C. Sustainability:

9. Nutrient balances
10. Use of natural resources (like water, energy)
11. Food losses and food waste
12. Terrestrial Protected Areas
13. Proportion (%) of fish stocks within their safe biological limits
14. Forest area primarily designated for provision of environmental and social services
15. Forest area per annum growth (%)
16. GEF Benefits Index (GBI) for Biodiversity

⁵ OECD-Eurostat Handbook on Nutrient Budgets, http://epp.eurostat.ec.europa.eu/portal/page/portal/agri_environmental_indicators/documents/Nutrient_Budgets_Handbook_%28CPSA_AE_109%29_corrected3.pdf

⁶ <http://www.oecd.org/tad/agricultural-policies/sustainableagriculturalproductivitygrowthandbridgingthegapforsmall-familyfarms.ht>

Data requirements, challenges and limitations

4.9 The data requirements needed to produce the indicators to truly measure the sustainability of agriculture are substantial and currently not possible for many developing countries. This issue is being addressed by The Global Strategy to Improve Agricultural and Rural Statistics which focuses on improving the agricultural statistics including the environmental aspects from a methodological, a country basic data and a capacity perspective.

4.10 Given the multi-dimensional and context-dependent nature of sustainability, it is difficult to conceive a single metric, other than troublesome composites, that expound the notion of sustainability in all its forms – thus the “dash board” approach. An integrated approach with a suite of indicators is consequently required, which takes stock of countries’ capacities and commitments as well as their level of development. In this regard, while global goals may help generate political will and resources, realities at the national level demand that targets be adapted to country conditions. Data at the national level are lacking in quantity and quality, but in any case often hide enormous disparities within borders. Therefore, geospatial data would play an important role in identifying and monitoring national environmental “hotspots” and for policy targeting such as areas affected by water scarcity, land degradation and biodiversity loss. With the increasing use of geospatial data for environmental-economic accounting, methodological cooperation between countries is important for the formulation of comparable indicators

Conclusions

4.11 There is growing recognition, as evidenced by the proposals for goals and targets in the area of sustainable agriculture and sustainable food systems, of the need to address this subject in the SDGs and to articulate the linkages between this subject and key development issues such as food security and nutrition, poverty reduction, gender equity, also taking into account the water-energy-food-ecosystems nexus.

4.12 The System of National Accounts and the System of Environmental-Economic Accounting provide the internationally agreed statistical standards for measuring economic, environment and socio-demographic dimensions of sustainable agriculture in combination with household surveys and administrative sources. Major global initiatives are underway to strengthen the statistical capacity under the Global Strategy to Improve Agricultural and Rural Statistics, and the Implementation Programme of the 2008 SNA and SEEA 2012 that target the improvements of the institutional arrangements, the statistical infrastructure and operations from basic statistics to macroeconomic and environmental statistics in support of indicators on sustainable agriculture. These strategies are being tailored at the country levels so as to be able to inform agricultural sustainability policy issues at country level.

4.13 The informative value of all indicators is directly related to the underlying quantity and quality of data. Therefore further capacity development efforts are required to ensure that the most critical aspects of sustainable agriculture can be measured in all countries⁷

⁷

The following references were used in the preparation of this note:

Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/agri_environmental_indicators/introduction;

FAO, FAOSTAT: <http://faostat.fao.org/site/674/default.aspx>;

FAO, Forest Resources Assessment: ⁷ <http://www.fao.org/forestry/fra/>;

FAO, AQUASTAT: <http://www.fao.org/nr/water/aquastat/main/index.stm>;

FAO, Statistical Data Warehouse: <http://data.fao.org/statistics>;

FAO, FAO Strategic Objectives. Available from <http://www.fao.org/docrep/018/mi317e/mi317e.pdf>;

FAO, General Situation of World Fish Stocks, <http://www.fao.org/newsroom/common/ecg/1000505/en/stocks.pdf> ;

FAO , The Global Bioenergy Partnership Sustainability Indicators for Bioenergy (2011).

<http://www.globalbioenergy.org/programmeofwork/task-force-on-sustainability/gbep-report-on-sustainability-indicators-for-bioenergy/en/>;

Global Strategy: <http://www.fao.org/economic/globalstrategy/en/#.Up7ooneoF8E>;

OECD, <http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm>; UN, Millennium Development Goal Indicators.

<http://mdgs.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm>;

UNSD, SEEA: <http://unstats.un.org/unsd/envaccounting/seearev/>

Statistical Note 5:

Desertification, Land Degradation and Drought (DLDD)¹

Main policy issues, potential goals and targets

5.1 Desertification, along with climate change and the loss of biodiversity was identified as the greatest challenge to sustainable development during the 1992 Rio Earth Summit. Established in 1994, the United Nations Convention to Combat Desertification (UNCCD)² addresses specifically the arid, semi-arid and dry sub-humid areas, known as the drylands, where some of the most vulnerable ecosystems and peoples can be found. The text of the UNCCD notes that Desertification, Land Degradation and Drought (DLDD) “is caused by complex interactions among physical, biological, political, social, cultural and economic factors”. Therefore, monitoring and assessment of DLDD must effectively address complex human-environment interactions³.

5.2 As stated in the issue brief, goals and targets in the SDGs addressing the adverse impacts of climate change and biodiversity loss, including on poverty, would need to address DLDD because of its substantial contribution to these and other problems (including diminishing sustainable livelihoods and socio-economic development). A DLDD focused goal requires a concerted global shift to the sustainable management of land and water resources. A Land Degradation Neutral World (LDNW) would imply: (1) prevent or avoid the degradation of healthy and productive lands through sustainable land management (SLM) and sustainable forestry management (SFM) practices, including agroforestry, sustainable agriculture and livestock practices, water management, and soil conservation, and (2) where feasible, regenerate land that is already degraded.

Conceptual and methodological tools

5.3 A DLDD policy, conceptual and reference framework can be found in UNCCD. Implementation of the UNCCD needs agreed, scientifically-sound and practical methodologies for monitoring and assessing its impacts on dryland ecosystems and on the livelihood of its population, as well as its contribution to global environmental problems. After the initial implementation phase of UNCCD, Parties to the Convention in 2007 adopted a ten-year strategic plan (2008–2018). The plan includes a results-based management

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Denmark, the Netherlands, United Kingdom, UNCCD Secretariat.

² In the 10-Year Strategy of the UNCCD (2008-2018), Parties to the Convention further specified their goals: “to forge a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought in affected areas in order to support poverty reduction and environmental sustainability”. The Convention’s 195 parties work together to improve the living conditions for people in drylands, to maintain and restore land and soil productivity, and to mitigate the effects of drought.

³ <http://www.unccd.int/Lists/SiteDocumentLibrary/conventionText/conv-eng.pdf> (page 2)

approach built on a set of specific objectives and indicators, and a new monitoring, assessment and reporting process – the performance review and assessment of implementation system.

5.4 Relevant concepts are defined in the official documentation of UNCCD. The Glossary for UNCCD reporting synthesizes and provides basic terminology. The Template and reporting guidelines are currently under revision to accommodate changes requested by the Conference of the Parties (COP) 11 decisions in 2013. However, after 20 years of implementation of the Convention, the definitions of desertification and land degradation is still under discussion. The lack of an agreed definition of desertification is one of the causes of the limited availability of data that are spatially explicit to affected areas.

5.5 In terms of conceptual framework for the work of UNCCD, an ad hoc advisory group of technical experts (AGTE) recommended a DPSheIR (Driving Force-Pressure-State-human and environmental Impact-Response) framework⁴ which allows impacts on human well-being to be recorded along with impacts on ecosystem services.

5.6 A statistical framework that could be applied for the production of data and indicators on DLDD relevant themes is the *Framework for the Development of Environment Statistics*⁵ (FDES 2013) adopted by the UN Statistical Commission in 2013. The FDES 2013 and its Basic and Core Sets of Environment Statistics identify and organize a wide scope of statistics useful to inform on the state and changes of DLDD processes and guide countries in their data collection and dissemination programmes.

5.7 The System of Environmental-Economic Accounting (SEEA) Central Framework was adopted as an international standard by the UN Statistical Commission in 2012. It is a multipurpose conceptual framework for understanding the interactions between the economy and the environment and for describing stocks and changes in stocks of environmental assets. As such, it provides a tool to describe changes in land cover and soil and to link those changes to land use and other human activities. The SEEA Central Framework is based on agreed concepts, definitions, classifications, and accounting rules. As an accounting system it enables the organisation of information into tables and accounts in an integrated and conceptually coherent way. This information can be used to derive coherent indicators to inform decision-making and to provide accounts and aggregates for a wide range of purposes.

5.8 The SEEA Experimental Ecosystem Accounting is an integrated statistical framework for organising biophysical data, measuring ecosystem services, tracking changes in ecosystem assets and linking this information to economic and other human activity. The SEEA Experimental Ecosystem Accounting provides a complementary perspective to the

⁴ Available at <http://www.unccd.int/Lists/OfficialDocuments/cop11/cst2eng.pdf>

⁵ United Nations (2013). *Framework for the Development of Environment Statistics 2013* was endorsed by the Statistical Commission as the framework for strengthening environment statistics programmes in countries, is available at <http://unstats.un.org/unsd/environment/fdes.htm>. The FDES 2013 is a multi-purpose conceptual and statistical framework that is flexible, comprehensive and integrative in nature.

accounting approaches described in the SEEA Central Framework by providing a coherent and integrated approach to the assessment of the environment through the measurement of ecosystems, and measurement of the flows of services from ecosystems into economic and other human activity.

5.9 The SEEA Central Framework and the SEEA Experimental Ecosystem Accounting contain agreed interim classifications of land use and land cover, and several concepts, definitions, classifications and accounting tables relevant to the measurement of the drivers, pressures, state, impact and responses related to DLDD.

Existing and new indicators

5.10 The COP 11 in 2013 adopted a revised set of six progress indicators⁶, that are primarily aimed to monitor the achievement of the UNCCD strategic objectives (see annex 1). They include (for the affected areas): 1) trends in population living below the relative poverty line and/or income inequality; 2) trends in access to safe drinking water; 3) trends in land cover; 4) trends in land productivity or functioning of the land; 5) trends in carbon stocks above and below ground; 6) trends in abundance and distribution of selected species. The COP 11 decided that the term “progress indicator” be used, rather than “impact indicator”, when referring to the indicators used to track progress in the implementation of the Convention. The previous set of impact indicators has followed a refining and mainstreaming process⁷ since they were provisionally adopted⁸ in 2009.

5.11 With respect to actual quantitative and qualitative data reporting to the UNCCD, reports by Parties (including affected) and reporting agencies can be seen at the PRAIS⁹ website. The main factors which have limited the effectiveness of reporting include both the limited data coverage and comparability of reported national data which have in general not been sufficient to obtain statistically representative results. The limited data comparability results from using different definitions, measurement and/or classification methods by reporting countries.

⁶ Decision 22/COP 11, Annex 1, <http://www.unccd.int/Lists/OfficialDocuments/cric11/4eng.pdf>

⁷ The refinement process of impact indicators was launched in 2010. The use of categories such as strategic objectives, indicators, metrics and proxies has evolved over time, and so have the thematic areas, indicators and metrics. In 2012, affected country Parties reported for the first time using two impact indicators: land cover status and poverty rate.

⁸ The UNCCD impact indicators (2009) included: 1) Water availability per capita in affected areas; 2) Change in land use; 3) Proportion of the population in affected areas living above the poverty line; 4) Childhood malnutrition and/or food consumption/ calorie intake per capita in affected areas; 5) The human development Index; 6) Level of land degradation (including salinization, water and wind erosion, etc.); 7) Plant and animal biodiversity; 8) Aridity index; 9) Land cover status; 10) Carbon stocks above and below ground and 11) Land under Sustainable Land Management (SLM). Further proxies and metrics are provided in the documentation.

⁹ The PRAIS portal (<http://www.unccd-prais.com/>) contains references to the glossary, concerning methodological matters and the reporting templates.

Data requirements, challenges and limitations

5.12 DLDD drivers include social and economic data most of which is available from national or international sources for affected countries. Environmental drivers will include physical characteristics such as land, ecosystem and biota characteristics and their changes over time. Environmental pressures encompass the occurrence of phenomena such as drought. Immediate and pervasive impacts in the environment such as degradation and desertification in particular are clearly identified, although they are more difficult to measure. Other social impacts including negatively affecting livelihoods, increasing hunger and malnutrition and poverty can also be found within the social statistics domain (either from national statistical system or international estimation). Finally, statistics about what the countries are doing to prevent and mitigate negative impacts of DLDD are to be informed upon.

5.13 In general, DLDD related state and impact data and statistics are scarce, scattered and not produced on a regular manner, particularly in the affected countries. There are insufficient statistics to inform about the extent and location of different types of degradation and desertification processes, as well as other environment topics (i.e. impact on biota, soil quality, agricultural practices, etc.); at both the national and global level. Economic activity, health, demographic, poverty and other basic statistics are relatively more available in countries, but to be integrated with DLDD, spatial data need to be geo-referenced, which is not the case in least developed and developing affected countries. Lack of reliable, timely and regular statistics about the drylands severely obstructs production of indicators.

5.14 Concepts, definitions and classifications pertaining to DLDD issues vary historically and among countries, institutions, as well as across international agencies. The spatial extent of drylands remains uncertain due to variations in ecosystem sub-types, data variability and the different classes and thresholds applied to remotely sensed data, making global comparisons challenging¹⁰. Furthermore, UNEP¹¹ states that different methods of assessing land cover and use continue to yield very different results. The limited globally comparable data on land degradation – an essential information base for dryland nations to address the problem – date from the Global Assessment of Human Induced Soil Degradation (GLASOD) in 1990, although new estimates using satellite data are being developed.

5.15 For the vast majority of least developed and developing affected countries, the case is usually that none or very scarce datasets or statistics, particularly on the environmental aspects, have been produced in accordance to statistical procedures and international recommendations. If produced at all, information might be reduced to an estimation (of a single variable, such as degradation extent, erosion extent or location of drylands) for a

¹⁰ Reynolds et al. 2007, cited by UNEP GEO 5, 2012, p.73.

¹¹ GEO-5, UNEP 2012. Chapter 8, Review of Data Needs, p.221

particular year, sourced in scientific studies in their field, or from a specific DDL D related project, along with maps to guide the intervention.

5.16 Technically, if the primary data was produced regularly and in a geo-referenced manner, it would not be difficult to produce statistics and indicators informing about not only the areas affected, its status and trends, but also about their human populations, social and health situation, and the affected natural resources and livelihoods. In countries where the extent and location of the DDL D phenomena can be portrayed on cartographic or digital maps, other layers of key information can be superimposed (as long as they are geo-referenced) in order to show for example the number of persons, the level of poverty, nutritional levels, mortality rates, life expectancy, agricultural activities and so on.

5.17 The occurrence of extreme events such as droughts and other similar and to a lesser degree the impact of such disasters might be recorded and constitute the administrative records for the production of statistics at the national level, but they can also be found within the international databases and sources (described in the Statistical Note for Climate Change and Disaster Risk Reduction).

5.18 The lack of statistics at the national level permeates to the regional and global levels. International organizations mostly rely on scientific studies and expert estimation to report on the main facts and indicators of the extent of drylands, degradation status and trends and desertification. UNCCD conducted a preliminary review of global data availability for the 6 progress indicators, a summary table can be found in annex 2.

5.19 There is no international database or statistical time series constructed with adequate statistical methods to inform in a harmonized and comparable way on the state and main trends of drylands and degradation. The availability is even less to inform about the impact of these phenomena on population, poverty/hunger, food security, migration, biodiversity, agriculture and livelihoods. Such insufficiency compromises the capacity of countries and agencies to populate and use indicators to inform the public and guide policy making.

5.20 One of the few databases available on the issue of land and soil statistics resides in FAOSTAT, under agri-environmental indicators¹². It presents national, regional and global data on a number of key indicators, for instance carbon content, average soil erosion expressed in GLASOD erosion degree (degrees) by country in 1991, and average land degradation in GLASOD erosion degree (degrees) by country in 1991. These data sets are presented as statistics and as world maps that can be consulted and downloaded for further work.

¹² http://faostat3.fao.org/faostat-gateway/go/to/browse/E/*/E

5.21 The Global Land Degradation Assessment in Drylands (GLADA)¹³ states that there is no authoritative measure of land degradation or its counterpoint – land improvement. The only harmonized assessment, the Global Assessment of Human-induced Soil Degradation is a map of perceptions on the type and degree of degradation. Dating from 1991, it is now out-of-date. There is pressing need for an up-to-date, quantitative and reproducible assessment to support policy development for food and water security, environmental integrity, and national strategies for economic development and resource conservation. In response GLADA was set to identify: 1) the status and trends of land degradation, 2) hotspots suffering extreme constraints or at severe risk and, also, areas where degradation has been arrested or reversed.

5.22 The Land Degradation Assessment in Drylands project¹⁴ (LADA 2006-2010) was conceived upon a request by the UNCCD COP, with the purpose of creating the basis for informed policy advice on land degradation at global, national and local level, through the assessment of land degradation at different spatial and temporal scales and the creation of a baseline at global level for future monitoring. The LADA developed tools and methods to assess the baseline condition of land degradation at global and national scale. These assessments are integrated with and supplemented by detailed local assessments focusing on root cause analysis of land degradation and on local (traditional and adapted) technologies for sustainable land management. As global output, a global Land Use System (LUS) classification and mapping was developed; a global NDVI study (GLADA) was conducted led by the World Soil Information Centre (ISRIC). A Global Land Degradation Information System (GLADIS) was also developed with the collaboration of IIASA which maps a new set of pressures and threats indicators at global level and allows access to information at country, LUS and pixel levels.

5.23 With respect to world soil information, ISRIC¹⁵ has a mandate to serve the international community with information about the world's soil resources to help addressing major global issues. ISRIC provides data and maps¹⁶ on different aspects of soil based on current global availability. As a science based foundation, it operates in three priority areas: a) soil data and soil mapping; b) application of soil data in global development issues and c) training and education. It. ISRIC is the ICSU World Data Centre for Soils (WDC-Soils) since 1989 and it collaborates with a wide range of partners worldwide. The institute was founded in 1966 following a recommendation of the International Soil Science Society (ISSS) and United Nations Educational, Scientific and Cultural Organization (UNESCO). With respect to its database¹⁷, ISRIC is developing a centralized 'World Soil Database' or

¹³ "land use change is driving land degradation: soil erosion, nutrient depletion, salinity, water scarcity, pollution, disruption of biological cycles, and loss of biodiversity. (...) Biomass is an integrated measure of biological productivity. Its deviance from the local norm may be taken as a measure of land degradation or improvement. Changes in biomass may be measured by remote sensing of the normalized difference vegetation index (...). Norms may be established by stratifying the land area according to climate, soils and terrain, and land use/vegetation; deviance may then be calculated regionally and combined globally to allow universal comparisons"._GLADA <http://www.isric.org/projects/land-degradation-assessment-drylands-glada>

¹⁴ http://www.fao.org/nr/lada/index.php?option=com_content&view=article&id=32&Itemid=113&lang=en

¹⁵ <http://www.isric.org/>

¹⁶ <http://www.isric.org/data/data-download>

¹⁷ <http://www.isric.org/content/data>

WOSIS18, where users can easily extract all validated and authorized data from the ISRIC data depository - soil profile data as well as area-class soil maps. Using a set of tools (Global Soil Information Facility, GSIF), it allows users to access, process and visualize various types of soil-related data. GSIF has been inspired by global environmental data initiatives such as Global Biodiversity Information Facilities, Global Land Cover mapping and One Geology.

5.24 The global land degradation information system GLADIS¹⁹ from FAO can also be an information resource, although it is being subject to a peer review for improvement as stated in their website. The DIS²⁰ Database is an application developed by NRD in collaboration with the DESERTLINKS and LADA projects.

5.25 A new World Atlas of Desertification²¹ (WAD) is being compiled under the coordination of the Joint Research Centre (JRC) of the European Commission, in partnership with the United Nations Environment Programme (UNEP). The WAD will be available as both a published reference atlas and an online digital information portal. The new World Atlas of Desertification will be built on recent scientific progress. It aims to be a pragmatic exercise and an example of how to implement up-to-date concepts and robust approaches for assessing and mapping land degradation and desertification.

Conclusions

5.26 Considerable work has been devoted to propose a set of a reduced number of implementation indicators by the UNCCD, including the consideration and adaptation of existing frameworks for the purpose of describing the DLDD dynamics which can serve as basis to also organize indicators and information for monitoring purposes.

5.27 The SEEA Central Framework and Experimental Ecosystem Accounts provide the tool to bring together and integrate environmental and economic data for the production of more robust and consistent indicators.

5.28 Nevertheless, the underlying data and statistics to calculate potential DLDD indicators as well as technical capacities need to be developed in the affected countries. The underlying data needed to calculate some of the relevant indicators in these cross cutting issues spread over a large proportion of the domain of environment, social and economic statistics. The inexistence or insufficiency of statistics on the extent and location of drylands, degradation and desertification, as well as other environment statistics, at both the national and global level is preoccupying. Economic activity, health, demographic, poverty and other basic statistics are relatively more available in countries, but to be integrated with DLDD spatial data they need to be geo-referenced. These elements would greatly benefit the construction of

¹⁸ <http://www.isric.org/data/wosis>

¹⁹ http://www.fao.org/nr/lada/index.php?option=com_content&view=article&id=185&Itemid=168&lang=en

²⁰ <http://dis-nrd.uniss.it/>

²¹ <http://wad.jrc.ec.europa.eu/>

key statistics, indicators and maps for the affected areas of the countries and therefore would increase monitoring potential for the goals and targets of the SDGs on DLDD.

Progress indicators for strategic objectives 1, 2 and 3

<i>Indicator</i>	<i>Metrics/Proxies</i>	<i>Description</i>	<i>Potential data source/Reference methodology</i>
Strategic objective 1: To improve the living conditions of affected populations			
Trends in population living below the relative poverty line and/or income inequality in affected areas	Poverty severity (or squared poverty gap)	Takes account of both the distance separating the poor from the poverty line and the inequality among the poor	World Bank methodology ^{a, b}
	<i>or</i> Income inequality	Alternative to the poverty severity metric for those countries where poverty is no longer an issue; strategic objective 1 has in this sense already been reached	OECD* methodology ^c
Trends in access to safe drinking water in affected areas	Proportion of population using an improved drinking water source	An improved drinking water source is defined as one that is protected from outside contamination through household connection, public standpipe, borehole, protected dug well, protected spring, rainwater, etc.	WHO/UNICEF* Joint Monitoring Programme for Water Supply and Sanitation methodology ^d
Strategic objective 2: To improve the condition of ecosystems			
Trends in land cover	Vegetative land cover	Intended as the distribution of land cover types of greatest concern for land degradation (excluding artificial surfaces) by characterizing vegetative land cover; it should include and specify natural habitat classes	Sourced from products like GlobCover ^{e, f} or finer-resolution products under development (Gong et al., 2013); and following established land cover classifications (e.g. FAO/ UNEP LCCS* ^g)
Trends in land productivity or functioning of the land	Land productivity dynamics	Based on long-term fluctuations and current efficiency levels of phenology and productivity factors affecting standing biomass conditions	New World Atlas of Desertification methodology; ^h update foreseen every five years
Strategic objective 3: To generate global benefits through effective implementation of the UNCCD			
Trends in carbon stocks above and below ground	Soil organic carbon stock <i>to be replaced by</i>	Intended as the status of topsoil and subsoil organic carbon	Sourced from e.g. the GTOS* portal ⁱ

<i>Indicator</i>	<i>Metrics/Proxies</i>	<i>Description</i>	<i>Potential data source/Reference methodology</i>
	Total terrestrial system carbon stock <i>once operational</i>	Including above- and below-ground carbon	To be streamlined with the GEF [*] -financed UNEP [*] Carbon Benefits Project ^{i,k}
Trends in abundance and distribution of selected species <i>(potentially to be replaced by an indicator measuring trends in ecosystem functional diversity once system understanding and data production allows)</i>	Global Wild Bird Index	Measures average population trends of a suite of representative wild birds, as an indicator of the general health of the wider environment	Following the indicator guidance provided for and to be streamlined with the CBD [*] process ^{l,m}

^{*} Abbreviations:

CBD - Convention on Biological Diversity
 FAO - Food and Agriculture Organization of the United Nations
 GEF - Global Environment Facility
 GTOS - Global Terrestrial Observing System
 LCCS - Land Cover Classification System
 OECD - Organisation for Economic Co-operation and Development
 UNEP - United Nations Environment Programme
 UNICEF - United Nations Children's Fund
 WHO - World Health Organization

^a <<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPA/0,,contentMDK:20242881~isCURL:Y~menuPK:492130~pagePK:148956~piPK:216618~theSitePK:430367,00.html>>.

^b <http://siteresources.worldbank.org/INTPA/Resources/tn_measuring_poverty_over_time.pdf>.

^c <<http://www.oecd.org/els/soc/43540354.pdf>>.

^d <<http://www.wssinfo.org/>>.

^e <<http://due.esrin.esa.int/globcover/>>.

^f <http://www.gofcgold.wur.nl/sites/gofcgold_refdataportal.php>.

^g <<http://www.fao.org/docrep/003/X0596E/X0596e00.htm>>.

^h <<http://wad.jrc.ec.europa.eu/>>.

ⁱ <<http://www.fao.org/gtos/tcoDAT.html>>.

^j <<http://carbonbenefitsproject-compa.colostate.edu/>>.

^k <<http://www.unep.org/climatechange/carbon-benefits/Home/tabid/3502/Default.aspx>>.

^l <http://www.unep-wcmc.org/wild-bird-index_568.html>.

^m <<http://www.bipindicators.net/WBI>>.

Source: Decision 22/COP.11

Annex 2: Evaluation of the progress indicators approved at COP 11 (source: UNCCD)

SO	Indicator and suggested metrics	Data availability	Time-bound	Reliability	Relevance	Main data sources	Comments
SO1	Trends in population living below the relative poverty line and/or income inequality in affected areas Metric: Poverty severity (or squared poverty gap)	Census data are available for 117 countries National level (rural)	1977-2012 (avail. per country varies) Can detect changes every 4-5 years	MDG indicator	Poverty is a key characteristic of livelihood deprivation and is both a cause and a consequence of DLDD. It can signal progress towards both national and international development priorities.	2013 World Development Indicators (WDI) – the World Bank http://wdi.worldbank.org/table/	Availability, frequency, and quality of poverty monitoring data remain low. However, it is essential to keep poverty among the mandatory indicators in order to ensure meaningfulness of reporting. Efforts should be done to provide countries with estimates to be used for reporting at least at the national and rural level. The World Bank is now using a new metric called “shared prosperity” that focuses on the incomes of the less well-off and that could replace the two proposed metrics (poverty severity and inequality) being suitable also for countries where poverty is no longer an issue. Explore the possibility to use it.
	Metric: Income inequality	35 countries through OECD (up to 155 countries through WDI)	1983-2011 (avail. per country varies) Can detect changes every 4-5 years	OECD indicator	Alternative for countries where poverty is no longer an issue. Income distribution has a long-standing tradition among household-level statistics, with regular data collections going back to the 1980s in many OECD countries	OECD http://www.oecd.org/statistics/ 2013 World Development Indicators (WDI) – the World Bank http://wdi.worldbank.org/table/	
SO1	Trends in access to safe drinking water in affected areas Metric: Proportion of population using an improved drinking water source	About 200 countries National level (rural)	1990-2011 Regularly updated Can detect changes every 4-5 years	MDG indicator	It measures changes in access to water sources for the population. It is an important measure of human well-being particularly in drylands. It can be used to assess the impacts of DLDD and mitigation efforts on water resources.	WHO / UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation http://www.wssinfo.org/data-estimates/introduction/	Data are available at the national and rural level only, but the indicator is relevant, reliable and regularly updated. To be considered mandatory for reporting against SO1.
SO2	Trends in land cover Metric: Vegetative land cover	Global products available with 300m – 1km resolution	2000 GLC2000 2005 & 2009 GlobCover Can detect changes every	Essential Climate Variable under UNFCCC	Land cover is a basic information requirement for the management of natural resources and it is essential to derive land productivity estimates. Analysing trends in land cover can help to identify changes in land resources and assist	GlobCover – ESA http://due.esrin.esa.int/globcover/ Global Land Cover 2000 (GLC2000) database – JRC http://bioval.jrc.ec.europa.eu/products/glc2000/products.php	Global products are available at a resolution suitable to derive national estimates. A baseline assessment should be possible. There is a need to confirm with ESA whether an update of GlobCover is foreseen to enable trend analysis.

			4-5 years		decision-making for sustainable land management.		To be considered mandatory for reporting against SO2.
SO2	Trends in land productivity or functioning of the land Metric: Land productivity dynamics	Global product under development with 8km resolution. (Also regional studies at 1km and below)	Baseline assessment under development. Update every 5 years. Can detect changes every 4-5 years.	New World Atlas of Desertification	A decline in land-productivity can be a first indication of ongoing land degradation processes. Crossing the above analysis with socio-economic and other physical data unequivocally identifies where and why land-productivity is changing and where threats are greatest.	JRC – WAD http://wad.jrc.ec.europa.eu/	Global and regional products (at higher resolution) are under development and should be ready in time for use in the next reporting cycle. A baseline assessment should be possible. Updates are then foreseen every 5 years, thus making possible a trend analysis. To be considered mandatory for reporting against SO2.
SO3	Trends in carbon stocks above and below ground Metric: Soil organic carbon stock <i>(to be replaced by Total terrestrial system carbon stock once operational)</i>	Global soil map units with 1km and 9 km resolution linked to organic carbon database	Can detect changes every 4-5 years.	LULUCF – UNFCCC GEF Project on Global Carbon Benefits ITPS	Soil organic carbon (SOC) is a key element of healthy soils to deliver ecosystem services and a very important component of the carbon cycle. Positive trend in SOC reflects good management practices in term of combating land degradation and mitigating and adapting to climate change	Harmonized World Soil Database http://webarchive.iiasa.ac.at/Research/LUC/External-World-soil-database/HTML/ ISRIC Global Soil Information Facilities http://www.isric.org/projects/global-soil-information-facilities-gsif JRC http://eusoils.jrc.ec.europa.eu/ESDB_Archive/octop/Global.html	Information available at global level can be used to derive a baseline. Updated information on SOC is increasingly expected as a result of LULUCF national gas emission inventories under the UNFCCC, the GEF Project on Global Carbon Benefits and activities under Pillar 4 of the Intergovernmental Technical Panel on Soils which will produce a fine-resolution global grid of soil properties by 2015. To be considered as mandatory for reporting against SO3
SO3	Trends in abundance and distribution of selected species Metric: Global Wild Bird Index	Data available for only 18 European countries (plus regional data for North America and Europe)	Time series from 1968 and 1980 onwards	CBD indicator	Measures average population trends of a suite of representative wild birds, as an indicator of the general health of the wider environment.	Biodiversity Indicator Partnership http://www.bipindicators.net/WBI	Not yet ready for reporting purposes. Reporting should be optional unless a more suitable metric is identified in collaboration with the CBD.

Statistical Note 6:

Water and Sanitation¹

Main policy issues, potential goals and targets

6.1 Water is essential to life. It is necessary for achieving equitable and sustainable social and economic development. Access to water and sanitation is required for, among others, eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality and women's empowerment, reducing child mortality, improving maternal health, combating major disease and ensuring environmental sustainability.

6.2 At a more basic level, water is a key element in growing food, generating energy, producing many industrial products as well as in ensuring the integrity of ecosystems and the goods and services they provide. Increasing competition for freshwater between agriculture, urban and industrial use, as well as population growth and changing diets, results in pressure on water resources, with many countries (or regions within countries) reaching conditions of water scarcity or facing limits to economic development. Moreover, water quality has been degraded over time further limiting the availability of freshwater resources and endangering human life and the environment. With the acceptance that the climate is changing, the increased frequency of water-related disasters, such as floods and droughts, will further exacerbate these challenges.

6.3 A summary of current water & sanitation challenges and developments were captured in the Issues Brief on the topic and discussed at the third session of the Open Working Group (OWG) on Sustainable Development Goals (SDGs). As highlighted in the progress report of its Co-Chairs, there was broad support for a dedicated sustainable development goal for water, as the complex interrelations among various water-related concerns call for an integrated approach that would be better catalyzed by a single water goal. In its recommendations for a possible global goal for water, UN-Water suggests how concerns expressed by Member States could be translated into more specific targets: a) achieve universal access to safe drinking water, sanitation and hygiene; b) improve by (x%) the sustainable use and development of water resources in all countries c) strengthen water governance d) reduce untreated wastewater by (x%), nutrient pollution by (y%) and increase wastewater reuse by (z%); and e) reduce mortality by (x%) and economic loss by (y%) from natural and human-induced water-related disasters.

6.4 The targets listed above lie within the larger context of the integrated management of water resources and securing sustainable water for all. In general water policy objectives/goals and the resulting targets can be framed within five broad categories: 1)

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Botswana, Denmark, Netherlands, United Kingdom, United States of America, Eurostat, FAO, UNICEF, UN Water, WHO.

improving drinking water, sanitation and hygiene; 2) promoting the sustainable use and development of water resources; 3) strengthening water governance; 4) improving water quality and wastewater management; and 5) reducing risks of water-related disasters. These categories are broadly aligned with the four categories from a statistical perspective, each representative of different data sources and methodologies: 1) improving drinking water, sanitation and hygiene; 2) managing water supply and demand; 3) improving the state of the environment and water resources; and 4) adapting to hydro-meteorological events. Strengthening water governance is fundamental to all the categories above.

Conceptual and methodological tools

6.5 Proper measurement of targets clearly requires the collection of data in order to measure progress and inform policy decisions. Frameworks have been developed in the area of economic and environmental statistics that could support an integrated statistical production process of collection, compilation and dissemination of statistics which is efficient and cost effective.

6.6 The *System of Environmental-Economic Accounting 2012-Central Framework* (SEEA Central Framework)², adopted as an international statistical standard by the United Nations Statistical Commission provides the internationally agreed framework for measuring the environment and its relationships with the economy. Water is one of the topics addressed in the SEEA and the SEEA-Water³, one of the SEEA subsystems adopted in 2007, provides the conceptual framework for integrating water-related information using agreed concepts, definitions and classifications consistent with those used in economic statistics. This supports the derivation of consistent and coherent indicators as well as scenario modeling for evidence-based decision-making. Although a limited number of countries compile the water accounts according to the SEEA on regular basis, the number of countries is increasing and it is expected to increase in view of the SEEA implementation strategy being adopted by countries. This strategy envisages the extensions of the supply and use tables compiled as part of the implementation of the System of National Accounts with physical flows including flows of water.

6.7 The *International Recommendations for Water Statistics* (IRWS)⁴, adopted in 2010, provides a list of data items and recommendations on the methods to compile them. It supports the compilation of the SEEA-Water tables and accounts and more broadly, the strengthening of water statistics programmes in countries. The compilation of water accounts

² United Nations (2014). *System of Environmental-Economic Accounting 2012 – Central Framework*. Forthcoming. Available from <http://unstats.un.org/unsd/envaccounting/seearev/>

³United Nations (2012). *SEEA-Water: System of Environmental-Economic Accounting for Water*. Statistical Papers, Series F, No. 100. Sales No. E11.XVII.12. Available from <http://unstats.un.org/unsd/envaccounting/seeaw/seeawaterwebversion.pdf>.

⁴United Nations (2012). *International Recommendations for Water Statistics*. Statistical Papers, Series M, No. 91. Sales No. 10.XVII.15. Available from <http://unstats.un.org/unsd/envaccounting/irws/irwswebversion.pdf>.

based on the principles of the SEEA is already underway in many developing and developed countries. The accounts provide a wealth of information on the water cycle in the environment and in the economy, including the supply and use of water in physical and monetary terms which can easily be linked with other economic information derived in the System of National Accounts.

6.8 The *System of Environmental-Economic Accounting 2012 – Experimental Ecosystem Accounting* (SEEA Experimental Ecosystem Accounting)⁵ provides the statistical framework to measure ecosystems and their linkages with economic and human activities. It is a synthesis of current knowledge giving a starting point for the testing of ecosystem accounting at national and sub-national level. Similarly to the SEEA Central Framework, it applies accounting concepts, structures, rules and principles to the measurement of ecosystems. In the context of water, the SEEA Experimental Ecosystem Accounting addresses issues of measurement of conditions and changes in conditions of water related ecosystems, including water quality, and services provided (provisioning, regulating and cultural) by these ecosystems.

6.9 The *Framework for the Development of Environment Statistics (FDES)*⁶, endorsed by the United Nations Statistical Commission in 2013 as the framework for strengthening environment statistics programmes in countries provides an organizing structure for environment statistics and contains a basic and a core set of environment statistics including those related to water. It identifies a wide set of statistics needed to inform about the relationship of water with the environment, the society and the economy. The definitions and classifications used in the FDES are consistent with those of SEEA-Water and IRWS.

6.10 Global collection of water statistics is implemented by a number of international and intergovernmental organizations. The UNSD/UNEP and the OECD/Eurostat joint questionnaires ask for key information concerning water resource management in a country. They contain methodological guidance, definitions and classifications. Internationally comparable statistics and indicators in the form of tables, charts and maps are disseminated on the web⁷.

6.11 The World Meteorological Organization (WMO) provides guidance for undertaking water resources assessments and measurable criteria for assessing national capabilities in this regard. Similarly, WMO also provides guidance on the effective implementation of flood forecasting and warning systems and an integrated approach to drought management. Also several global data centres exist, including inter alia, the Global Runoff Data Centre (GRDC)

⁵ United Nations (2014). *System of Environmental-Economic Accounting 2012 – Experimental Ecosystem Accounting*. Forthcoming. Available from <http://unstats.un.org/unsd/envaccounting/seearev/>

⁶ United Nations . A Framework for the Development of Environment Statistics. Available from <http://unstats.un.org/unsd/environment/fdes.htm>

⁷ See e.g. <http://unstats.un.org/unsd/ENVIRONMENT/qindicators.htm>

for discharge, the Global Precipitation Climatology Centre (GPCC) for precipitation and the International Groundwater Resources Assessment Centre (IGRAC) for groundwater.

6.12 The *WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)*⁸, as the official United Nations mechanism tasked with monitoring progress towards the MDG relating to drinking-water and sanitation, reports annually about status and trends on the population with and without access to improved drinking water sources and basic sanitation facilities for almost all countries, covering 99.9% of the world population. It provides international agencies and national statistical offices with questionnaire tools to arrive at data that is consistent for coordinated monitoring across countries. Data sources used by JMP in its models include data collected by national statistics offices and international survey programmes through nationally representative household surveys and national censuses.

6.13 *AQUASTAT, FAO's global water information system*⁹, operational since 1994 is the global country-level water information system on water resources, water uses, irrigation and drainage. It has developed many methodological reports, as well as detailed survey questionnaires and guidelines that allow updating both the quantitative data and the qualitative information. Most countries being located in one or more international river basins, it puts considerable effort in harmonizing data on water resources at both country- and river basin-level.

6.14 AQUASTAT relies to a large extent on national capacities and expertise. It cooperates with national resource persons and networks on water and agriculture. It contributes to the development of national capacity on water information management, systematic data collection, harmonization of definitions, development of metadata and database management and information dissemination systems.

6.15 The objective of the *Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS)*¹⁰ implemented by the WHO under the aegis of UN-Water is to monitor the inputs required to extend and sustain water, sanitation and hygiene (WASH) services and systems. GLAAS collects primary data through a questionnaire and uses secondary data collected by different agencies, including OECD DAC data on ODA flows and JMP data, complemented by data collected through the External Support Agency questionnaire (ESA). The methodology being developed builds upon the System of National Accounts (SNA), the SEEA and SEEA-Water.

⁸ For more information see WHO / UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation available at <http://www.wssinfo.org/>

⁹ For more information see FAO Aquastat available at <http://www.fao.org/nr/aquastat>

¹⁰ For more information see WHO, Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS), available at http://www.who.int/water_sanitation_health/glaas/en/

Existing and new indicators

6.16 The JMP for Water Supply and Sanitation is mandated to monitor progress towards the MDG relating to drinking-water and sanitation (MDG 7, Target 7c), which is to: "Halve, by 2015, the proportion of people without sustainable access to safe drinking-water and basic sanitation". Access to drinking-water and to basic sanitation is measured by the MDG indicators:

- Proportion of population using an improved drinking-water source;
- Proportion of population using an improved sanitation facility.

6.17 JMP relies to a large extent on national data sources, capacity, and expertise. However the estimates are derived through global modeling exercises or expert opinion to ensure comparability and consistency over time and across countries. As such JMP data may differ from countries official statistics.

6.18 Among many other indicators related to water resources, water uses and agricultural water management, AQUASTAT's data on water withdrawal and renewable water sources have been successfully used for monitoring MDG indicator 7.5 on "Percentage of renewable water resources used". The Federated Water Monitoring System (FWMS) and Key Water Indicator Portal (KWIP), implemented by AQUASTAT on behalf of UN-Water, shows information by country on six major water indicators and highlights differences in data between agencies, where occurring

6.19 Efforts are underway to examine the measurability of new qualitative and quantitative aspects of water including water condition in ecosystems, the measurement of water quality in cross-sectional household surveys, measures of reliability of services, fecal sludge management and regulatory services for safely managed services, measurement of extra-household access in schools and health facilities as well as measurement of wastewater collection and treatment.

6.20 Indicators including water productivity by economic activity, water consumption and other resource efficiency calculations can be derived from the SEEA Central Framework. Also, several other statistical notes (such as Climate change and disaster risk reduction, Desertification, land degradation and drought, etc.) cover aspects of water and links will need to be made in order to meet data collection, monitoring and reporting for the full spectrum of water targets.

Data requirements, challenges and limitations

6.21 International data collection efforts such as the UNSD/UNEP and the OECD/Eurostat questionnaires have proven to be a useful and consistently improving means in compiling internationally comparable water statistics. However, there are still many concerns about the availability and quality of water data. Further harmonization and training in data collection

methods as well as capacity building in support of the implementation of internationally agreed statistical frameworks and recommendations are needed.

6.22 Development of a common set of definitions and classifications is a critical component of establishing a sustainable data collection process. For water, sanitation, and hygiene (WASH) statistics for instance, although national partners have generally appreciated and benefitted from the guidance provided to improve and develop their national monitoring frameworks and systems, “definitions and data sources used by the JMP are often different from those used by national governments.”¹¹ Also terms and definitions used by different initiatives are often different from those used in the international statistical standards and by the statistical community more generally.

6.23 Other challenges and limitations for the sustainable data collection, analysis and comparison process for water have been summarized in a number of reports. The UN-Water Country Briefs project launched in 2013 coordinated by AQUASTAT on behalf of UN-Water, highlighted major challenges, which include: discrepancies in data quality; differences in definitions and methodology; insufficient information for major indicators; difficulties in obtaining time series; sustainability of the monitoring process in relation to national water monitoring capacities and high cost of information gathering.

6.24 The 2012 GLAAS report also highlighted limited robust data, particularly on financial flows, as a challenge and constraint for monitoring and progress. The report indicates that improvement in monitoring is necessary so decision makers can effectively finance and implement system improvements. Specifically, the report states, capacity building that improves monitoring of WASH-related data, including robust information on financial flows, could assist countries in breaking through bottlenecks.

6.25 The current level of efforts and investments by countries to monitor water resources, their use, and their effective governance are not commensurate with the dimension of the water crisis, and substantial efforts are needed to collect the data and information needed to adequately monitor progresses in sustainable water use.

6.26 At the national level, data related to water is often collected by different ministries or associations in an uncoordinated fashion and usually for a specific purpose. Further the limited interconnectedness and exchange of data and information systems between national institutions is a concern often stemming from not applying a consistent statistical framework. This leads to duplication and overlaps of data collection as well as data gaps. The need for an integrated and coordinated approach to data collection and compilation is needed. The WMO’s Integrated Observing System (WIGOS) approach is one such attempt to improve the efficiency of observation systems.

¹¹ WHO and UNICEF. Progress on sanitation and drinking-water - 2013 update. Available from http://apps.who.int/iris/bitstream/10665/81245/1/9789241505390_eng.pdf?ua=1

6.27 At the global level, international agencies are developing global dataset to fill in the gaps of national data sources and the lack of comparability. While this situation is acceptable in the short term, it is not desirable in the longer term and the statistical system should be strengthened in order to be able to meet the demand for information.

6.28 Capacity building in both development and application of consistent definitions and standards and the establishment of rigor in data sources at country level is therefore crucial to enable successful monitoring of progress against national or global targets. Strengthening national capacities to formulate and develop the monitoring frameworks to collect, analyse and effectively use these data is critical. This requires a mix of efforts, ranging from supporting national statistics offices, line-ministries and lower-level monitoring information systems, including at project level and through decentralized authorities, to supporting the fundamental long-term implementation of adequate monitoring systems including the SEEA which eventually should become part and parcel of a good governance programme in each country.

Conclusions

6.29 The internationally agreed statistical frameworks for organizing and integrating water-related data, such as the SNA 2008, SEEA 2012, SEEA Water and IRWS, can provide useful guidance for measuring progress towards achieving the goal of universal access to water and sanitation and more broadly for informing water management policies. The compilation of data by countries on a continued, sustained basis consistent with these global standards will facilitate monitoring and international comparability.

6.30 Capacity building to develop the national statistical systems and efforts to strengthen the national coordinating mechanism among various data providers are crucial for the sustained production of information on water for integrated policy making and monitoring progress in the medium and long term. A system's approach that focuses the entire integrated system of data production and use within the national statistical systems allows a common standardized information management framework governing the statistical production process that is coordinated, cost effective and integrated. It facilitates a broad based, balanced and sustainable national statistical capacity building approach driven by country policy priorities and ownership, as well as the release of integrated and multi-dimensional statistics on water and sanitation that are coherent, consistent and of the highest quality assurance.

Statistical note 7:

Employment and decent work¹

Main policy issues, potential goals and targets

7.1 As indicated in the TST Issue Brief and confirmed by the discussion in the Open Working Group Session 4, as well as through the post-2015 development agenda consultation process, realizing full and productive employment and decent work for all is widely viewed as central development goal. Job creation emerged as a pressing need and top priority in almost all countries where post-2015 consultations have been held.

7.2 All countries, both developed and developing, aspire to generate sufficient productive employment so as to support a decent living standard for their people. Translating this goal into targets that capture the multifaceted nature of the global jobs challenge and can be supported by indicators that enable assessments of progress to be made on a regular basis will require a focus on both political priorities and methodological issues. Within countries, the indicators should also reflect the disparities and inequalities of the labour market conditions according to disaggregation by jobs, gender, age, income and trans-boundary effects of globalization of production, in addition to macroeconomic measures.

7.3 As highlighted by the Secretary General in his report to the General Assembly “Dignity for All”, a new post 2015 framework should identify key transformational changes that enable countries to move onto a sustainable development trajectory that will eradicate extreme poverty while respecting the environmental boundaries. A central feature of such change is a shift from less productive jobs that leave working women and men and their families in poverty to more productive, safe and fairly remunerated employment – decent work. The following dimensions of the global jobs challenge have emerged from the post-2015 debate as desirable and feasible targets in a new development framework:

- Ending working poverty: As highlighted in the TST Issues Brief, about a quarter of the world’s workforce lives with their family below the \$2 a day poverty line. Of them, nearly half live in extreme poverty, i.e. below \$1.25 a day. As discussed in the OWG fourth session, improving livelihoods for the most vulnerable workers and households could be a potential target in the new agenda.
- Reducing unemployment, especially amongst youth²: A potential target could address the large and growing numbers of the unemployed, in particular among the youth. In that regard, the HLP has proposed to set a target to decrease the number of young people not in education, employment or training by a certain proportion, while the

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Botswana, Germany, United Kingdom, United States of America, Eurostat, ILO, OECD, UNECE.

² For youth population, the “neither in employment nor education and training (NEET)” indicator could be a better and more meaningful measure than the unemployment rate, as increases in education and training participation can lower the labour force participation rate, with the usual increase in unemployment rate. More precise definition of the NEET indicator is needed to advance meaningful cross country comparisons

report of the Sustainable Development Solutions Network (SSDN) has proposed to target the reduction of youth unemployment below the rate of 10 per cent.

- Enhancing female participation in employment: It is still very low in many regions, but another important target. It would contribute to address vulnerabilities and gender inequalities at the same time as generating large development spill-overs.
- Reducing Informality: In the fourth session of OWG many countries expressed concern not only about the quantity of jobs, but also about the quality of jobs, in particular in developing economies. Targets and indicators capturing the transition from informal to formal jobs could be considered in the future development framework. Reducing informality would be a major element of strategies to reduce poverty, in particular working poverty. An increase in the share of regular waged employment, protected by labour legislation, covered by social security, entitled to employment benefits, etc., is an indicator of such transitions.
- Social protection: The lack of social protection coverage for the majority of workers and their families is a major bottleneck to the progress towards a more inclusive and prosperous global society. Nationally defined social protection floors offering a basic set of income and health guarantees would enhance the resilience of the poor and the near-poor, ensuring some buffer against income reversals due to economic shocks, natural disaster and climate change.³

Conceptual and methodological issues

7.4 Labour market statistics are commonly referred to in policy debates. In developed countries, changes in the unemployment rate or the number of vacancies are used to indicate the health and stability of an economy by policy makers, stock exchange analysts and financial markets. In some cases, employment benchmarks are set as explicit targets of monetary and fiscal and social policies. The statistical challenge for a global development agenda focusing on employment is that there are limitations with regard to the availability and timeliness of labour market data in developing countries, in particular for the poorest countries.

7.5 In addition, available statistics for most developing countries do not always fully account for the distinctive features of labour markets characterized by widespread informality and an often vast pool of underemployed labour engaged in own-account survival activities or relying on unpredictable casual work at a daily wage. Because the poor in developing countries cannot afford not to work, even if the job provides only a subsistence income, aggregate employment increases more or less in line with population growth, regardless of fluctuations in the business cycle or the quality of the jobs. Unemployment rates, which in developed economies provide detailed and timely indicators of the health of the labour market, are much less useful in most developing countries. Thus, the total number of people employed/unemployed is not a sufficient benchmark for targeting and monitoring progress on

³ A number of relevant targets and indicators are discussed in the statistical note of the TST Issues Brief on Social Protection.

job creation, poverty reduction and development. A wider collection of indicators and proxies is necessary.

7.6 Measuring the quality of jobs is a complex task and still a difficult concept to fully operationalize in the context of national level policy discussion. The ILO's widely-endorsed goal of Decent Work provides a set of parameters to gauge the quality of jobs in both developed and developing economies: decent work combines access to full and productive employment with rights at work, social protection and the promotion of social dialogue, with gender equality as a cross-cutting issue. The ILO has focussed on developing statistical indicators in ten component categories of decent work: employment opportunities; adequate earnings and productive work; decent hours; combining work; family and personal life; work that should be abolished; stability and security of work; equal opportunity and treatment in employment; safe work environment; social security; social dialogue; and workers' and employers' representation. Under these headings 18 main indicators can be produced for a reasonably large number of countries on a reasonably frequent basis. These indicators may need further consideration by taking into account 19th ICLS resolutions concerning statistics on work, employment and labour underutilisation. In developed countries, there may be a number of decent work indicators that cannot be measured. Moreover, developing countries do not always have the statistical and institutional capacity to collect the information required to generate all of these indicators on a regular or up to date basis. Ongoing Institutional and statistical capacity building have to continue to further improve the situation.

7.7 Labour statistics are part of the set of socio-demographic related statistics of the System of National Accounts and System of Environmental Economic Accounting. These Systems should be used to generate a consistent set of economic and employment statistics that become vital with the adoption of labour market policies that are integrated and benchmarked with other policy objectives for the real, fiscal and monetary sector. With the emerging country practices in the implementation of SEEA, also the concept of "green jobs" could be clarified.

7.8 In the context of quality of work frameworks, the ongoing OECD project "Defining, Measuring and Assessing Job Quality and its Link to Labour Market Performance and Well Being" aims to provide a conceptual and operational framework for measuring job quality. This work integrates the work of the UNECE Taskforce on quality of employment, whose members include both the OECD and ILO. This Task force is developing the "Statistical Framework for Measuring Quality of Employment" under the auspices of the Conference of European Statisticians to be adopted in 2015. This framework is expected to propose a number of statistical indicators for dimensions of quality of employment, including working poor, youth unemployment, informality, female labour force participation and social protection

Existing and new indicators

7.9 In the current MDG framework, progress in achieving full and productive employment and decent work is monitored under MDG 1, target 1B. Four indicators are used, although no quantitative time-bound target is attached:

- MDG1.4 - “Growth rate of GDP per person employed” (as a proxy for the growth rate of labour productivity, i.e. the potential for increases in productive employment);
- MDG1.5 - “Employment-to-population ratio” (as a proxy of changes in the volume of employment);
- MDG1.6 - “Proportion of employed people living below an international poverty line” (as a proxy for the poor quality of jobs); and
- MDG1.7 - “Proportion of own-account and contributing family workers in total employment” (as another proxy for vulnerable employment, i.e. poor quality of jobs).

7.10 Gender aspects are also specifically highlighted as part of MDG3-Promote Gender Equality and Empower Women and the related indicator MDG3.2 - “Share of women in wage employment in the non-agricultural sector”.

7.11 These five indicators were selected because of their availability for the largest number of countries at the minimum cost. Building on them and adding a few additional indicators with regard to the volume, quality and distribution of employment across population and sectors of economy, it would be possible to define a core set of indicators that could be adapted to different targets according to the specificities of the labour market in countries at different levels of development. For example, the measures related to quality of jobs could be complemented by indicators such as working poverty rates calculated according to national poverty lines or earning lines. Additional indicators related to the share of informal employment in total non-agricultural employment may be appropriate for developing countries⁴. For employment and labour participation considerations for youth and women, appropriate indicators could include unemployment rates and employment to population rates disaggregated by sex and age as well as an indicator measuring the number of young people not in education, employment or training. In order to monitor the structural transformation of the economies, an indicator on the distribution of paid employment by sector could be used.

Data requirements, challenges and limitations

7.12 The indicators mentioned above are based on internationally agreed definitions, classifications, standards, recommendations and best practices. The statistics for those indicators are collected through national labour force and business and household surveys,

⁴ Further consideration has to be given to these indicators considering the new resolutions on work and employment statistics, because the groups of interest may not be in employment. For developed countries, a measure of the proportion of own account workers is not, in and of itself, a good indicator of the proportion of the employed who are in vulnerable employment. To obtain a meaningful indicator for workers with this employment status, it has to be combined with national (low) earning lines.

economic and population censuses and administrative records and are used routinely in many countries to monitor labour market developments.

7.13 At the international level, comprehensive statistics on total and paid employment disaggregated by sex, by branch of economic activity, occupation and status in employment, as well as on unemployment, economically active population, wages, hours of work and working poor are collected annually by the ILO through a specialised questionnaire, sent directly to the official national authorities in all member States and Territories. Statistics are also gleaned from national publications and websites. The ILO database contains statistics for more than 200 countries and territories, and covers 100 indicators. The data used to calculate the indicators are collected and disseminated annually with a one-year lag. These statistics are published and available online at www.ilo.org/ilostat which in the near future will be merging the former www.laborsta.ilo.org, and www.kilm.ilo.org. Other ILO publications such as “Global Employment Trends” and “Global Wage Report” and their respective databases also cover a number of relevant statistical topics. Employment related statistics are also collected in conjunction with other statistics such as annual national accounts by economic activity by United Nations Statistics Division and the annual industrial statistics by industrial activities by United Nations Industrial Organisation. In addition, national statistics on employment and unemployment are collected by the International Monetary Fund.

7.14 Some of the indicators proposed are not readily available. Data on the quality of jobs and earnings are especially scant and difficult to collect, not to mention the paucity of information on employment in environmentally sustainable economic activities. Therefore, as part of the future development framework, special efforts should be made to improve the national collection of labour market statistical data in those areas as well as strengthening the capacities of developing countries, especially the poorest ones. It is also important to recognize that available data are not always used to the largest possible extent; there is a strong need to build and strengthen country-level capabilities for analysis and transparent dissemination of the results.

Conclusions

7.15 An overarching sustainable development goal on “full and productive employment and decent work” will require a set of targets and indicators going beyond the existing five MDG indicators. A core set of indicators for targets in the areas of working poor, youth unemployment, informality, female labour force participation and social protection are available and provide a menu of options to be adapted according to countries’ circumstances and availability of information. Nonetheless, strengthening national statistical collection and supporting national capacity building will be essential, especially for the poorest countries.⁵

⁵ References:

Methodological basis for the indicators proposed are provided in the following resolutions and guidelines adopted by International Conferences of Labour statisticians (ICLS):

Resolution concerning statistics of work, employment and labour underutilization adopted by the 19th ICLS, 2013 (http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-by-international-conferences-of-labour-statisticians/WCMS_230304/lang--en/index.htm);

Resolution concerning the measurement of employment-related income adopted by the 16th ICLS, 1998 (http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-by-international-conferences-of-labour-statisticians/WCMS_087490/lang--en/index.htm);

Resolution concerning statistics of employment in the informal sector adopted by the 15th ICLS, 1993 (http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-by-international-conferences-of-labour-statisticians/WCMS_087484/lang--en/index.htm);

Guidelines concerning a statistical definition of informal employment adopted by the 17th ICLS, 2003 (http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/guidelines-adopted-by-international-conferences-of-labour-statisticians/WCMS_087622/lang--en/index.htm);

The following manual and publications provide technical guidance on the definitions, concepts, classifications and measurement methods:

Measuring informality: A statistical manual on the informal sector and informal employment,
http://www.ilo.org/stat/Publications/WCMS_222979/lang--en/index.htm;

Decent Work Indicators: Guidelines for Producers and Users of Statistical and Legal Framework Indicators ILO Manual, second version,
http://www.ilo.org/stat/Publications/WCMS_223121/lang--en/index.htm;

ILO guide *Equal pay: An introductory guide*, http://www.ilo.org/global/standards/information-resources-and-publications/publications/WCMS_216695/lang--en/index.htm;

ILO Post-2015 concept note 2, “*Jobs and livelihoods: Meaningful ways to set targets and monitor progress*”,
http://www.ilo.org/global/topics/post-2015/documents/WCMS_213209/lang--en/index.htm

Statistical note 8:

Social protection¹

Main policy issues, potential goals and targets

8.1 The Rio+20 outcome document “*The Future We Want*”², stresses ‘the need to provide social protection to all members of society, fostering growth, resilience, social justice and cohesion’ and strongly encourage ‘national and local initiatives aimed at providing social protection floors for all citizens’.

8.2 Social protection also emerged as a core priority in various forums on the Post-2015 Development Agenda, both at national and international levels. Many forums focused on the need for better social protection, especially where economic and social insecurity is high and there are high levels of extreme poverty.

8.3 The report of the High Level Panel of the Post 2015 Development Agenda (HLP)³ argues that improved social protection mechanisms are indispensable means to eradicate poverty and establish a virtuous circle of inclusive economic growth leaving “no one behind”. The report proposes a target on improved social protection coverage⁴ as part of the poverty goal. The ILO Governing Body also supports a goal on social protection as one of four strategic pillars of the decent work agenda.

8.4 In the OWG sessions, linkages between social protection and food security were discussed and some countries proposed to include the implementation of social protection floor⁵ as component of a possible sustainable development goal on full and productive employment and decent work.

Conceptual and methodological tools

8.5 The following publications and documents provide the conceptual basis for social protection indicators:

- ILO. *World Social Security Report 2010/11, providing coverage in times of crisis and beyond*, “Chapter 1 Definitions, standards and concepts”⁶
- ILO. *Social Protection Floor for a Fair and Inclusive Globalization*.⁷

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, United Kingdom, United States of America, Eurostat, ILO, OECD, UNECE.

² <http://www.un.org/en/sustainablefuture/>, paragraph 156.

³ <http://www.un.org/sg/management/hlppost2015.shtml>

⁴ Social protection coverage: defined as social protection being available to those who need it, not necessarily an increase in transfer recipients.

⁵ Progress in introducing, expanding and improving social protection floors could be measured by looking at progress in different components of the core package identified in the ILO Social Protection Floors Recommendation, (No. 202) adopted by the International Labour Conference in 2012.

⁶ <http://www.ilo.org/gimi/gess/ResFileDownload.do?resourceId=15263>, and World Social Security Report 2012/13. ILO (forthcoming).

⁷ http://www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_165750/lang--en/index.htm

- ILO. *Resolution concerning the development of social security statistics*, adopted by the Ninth International Conference of Labour Statisticians, April-May 1957.⁸
- ILO. *The Social Security (Minimum Standards) Convention*, 1952 (No. 102).⁹
- ILO. *Decent Work Indicators: Guidelines for Producers and Users of Statistical and Legal Framework Indicators ILO Manual*. Second version.¹⁰
- European Commission and Eurostat. *ESSPROS Manual: The European System of integrated Social Protection Statistics*.¹¹
- OECD, Eurostat and WHO. *A System of Health Accounts*. 2011.¹²
- WHO, World Bank and USAID. *Guide to Producing National Health Accounts*.¹³
- WHO. *World Health Statistics 2010: Indicator Compendium*, Interim version.¹⁴

Existing and new indicators

8.6 Social protection had been omitted from the MDG targets and indicators. However, the widely-endorsed social protection floor approach provides a coherent and consistent policy tool which addresses multidimensional vulnerabilities in an integrated and inter-connected way. It is one of the foundations for inclusive, equitable and sustainable development, as it can simultaneously address the economic, social and environmental dimensions of sustainability.

8.7 At global level, the core set of indicators to measure and monitor progress in the implementation of social protection floors, could include:¹⁵

- Percentage of the population (including, if possible, information on coverage of migrants) with access to adequate and predictable social protection when they need it during their whole lifecycle, considering children, people in active age, pregnant women, older persons, and persons with disabilities;
- Percentage of the population protected against the financial costs of ill-health (e.g. through social health insurance or other mechanisms).

8.8 In addition to these core indicators, there should also be a dashboard of indicators that can be selected as appropriate for different countries. Some examples could include:

- percentage of older people receiving pension;

⁸ http://www.ilo.org/global/statistics-and-databases/standards-and-guidelines/resolutions-adopted-by-international-conferences-of-labour-statisticians/WCMS_087550/lang-en/index.htm

⁹ <http://www.ilo.org/ilolex/cgi-lex/convde.pl?C102>

¹⁰ http://www.ilo.org/stat/Publications/WCMS_223121/lang-en/index.htm

¹¹ http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-07-027/EN/KS-RA-07-027-EN.PDF

¹² http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-30-11-270/EN/KS-30-11-270-EN.PDF

¹³ http://www.who.int/entity/nha/docs/English_PG.pdf

¹⁴ http://www.who.int/gho/publications/world_health_statistics/WHS2010_IndicatorCompendium.pdf

¹⁵ The indicators listed are examples of measures that could be considered. Additional research would be needed to better understand their applicability in different countries' context. For instance, measuring the number of benefit recipients shows that it is not straightforward to determine shares of people "having access" to one or the other benefit – and this problem will be more serious in developing countries.

- percentage of families with children protected against the financial costs of ill-health (e.g. through social health insurance or other mechanisms);
- percentage of people with disabilities receiving disability benefits;
- percentage of people without employment receiving support;
- percentage of poor receiving adequate support;
- percentage of the food insecure population assisted through formal social protection programmes.

8.9 Each of these indicators should be disaggregated by sex, and could also be further disaggregated as far as possible by income, ethnicity and other criteria to track the inclusion of different groups.

8.10 For monitoring the progress made at the national level in achieving the objective of improved social security coverage, ten statistical indicators and three legal framework indicators have been selected and introduced in *Decent Work Indicators: Guidelines for Producers and Users of Statistical and Legal Framework Indicators ILO Manual*, second version.¹⁶

Data requirements, challenges and limitations

8.11 Data related to social protection are collected and disseminated by a number of organisations, including:

8.12 ILO's Social Security Inquiry Database¹⁷ offers statistical information on social security programmes (financing, expenditure, benefit levels and coverage). This database provides an overview of the situation of social security systems worldwide as well as a detailed description of the mechanisms on the basis of how various programmes operate. The database covers 124 countries from all regions and sub-regions of the world, and it is updated regularly. Data are compiled by the ILO in cooperation with the International Social Security Association (ISSA), OECD, EUROSTAT, ADB, and other international organizations, with some collected directly from national agencies administering social protection programmes.

8.13 World Bank's ASPIRE database¹⁸ consolidates comprehensive and harmonized data on Social Protection and Labor (SPL) programs and systems from 56 countries. It covers comparable performance indicators of social assistance, social insurance and labor market programs obtained from different data sources (ex. administrative data, surveys).

¹⁶ http://www.ilo.org/stat/Publications/WCMS_223121/lang--en/index.htm

¹⁷ http://www.ilo.org/dyn/iloosi/ssimain.home?p_lang=en

¹⁸ <http://datatopics.worldbank.org/aspire/>

8.14 Both the Eurostat database on social protection¹⁹ and the OECD database on social protection²⁰ contain substantive information on social protection for their member countries. Eurostat jointly with representative of its Member States developed in the late 70's the European System of integrated Social PROtection Statistics (ESSPROS)²¹. Under the ESSPROS System, the data on gross social benefits, the number of pension beneficiaries and the net benefit module is being collected. The ESSPROS framework enables a fully coherent comparison of social protection system in Europe - 28 Member States plus Switzerland, Island, Norway and Serbia. The ESSPROS data are made available to OECD and ILO and the EU data are used in a broader international context. OECD's social protection databases not only cover social protection spending and beneficiaries, but also social benefit eligibility and amounts for both working-age and retirement-age populations.²²

8.15 The Asian Development Bank Social Protection Index database contains annual data on social protection expenditures for Social Assistance (SA), Social Insurance (SI), and Labor Market Programs (LMP), and their respective number of beneficiaries for ADB member countries. It also contains the basic economic and social statistics of countries relevant to Social Protection (SP) Index calculation like GDP, population, labor force, and poverty indicators. The graphical presentation of the derived SPI in terms of SA, SI and LMP; breadth and depth; and poor and non-poor can also be viewed in this database.²³

8.16 As social protection data compiled by various organizations are not standardized, the ILO and the World Bank have worked together at the Social Protection Interagency Coordination Board (SPIAC-B) to promote harmonization of (i) concepts, definitions and classifications, (ii) agencies' data collection mechanisms, and (iii) in-country capacity building for data collection and management.

Conclusions

8.17 The extension of basic social protection guarantees remains a major development challenge in many countries for the coming years. It is indispensable because it (i) contributes to building resilience against shocks and prolonged crises that threaten to undermine the progress made under the MDGs and to send the most vulnerable deeper into poverty, (ii) supports productivity growth by raising standards of health and education and (ii) immediate relief of poverty and food insecurity.

8.18 Progress can be tracked in a majority of countries, with a feasible expansion of data collection on social protection at the national and global level. Ideally, further support for statistical capacity building would help to strengthen assessment of the coverage and impact of systems.

¹⁹ http://epp.eurostat.ec.europa.eu/portal/page/portal/social_protection/data

²⁰ http://stats.oecd.org/Index.aspx?DataSetCode=SOCX_AGG

²¹ http://epp.eurostat.ec.europa.eu/portal/page/portal/social_protection/data

²² <http://www.oecd.org/social/statistics.htm>.

²³ <http://spi.adb.org/spidmz/index.jsp>

8.19 The social protection indicators are intended to support monitoring progress towards the goals of full and productive employment and decent work for all and poverty eradication in a given economy and should ideally be analysed together in a holistic manner.

Statistical note 9:

Education and Culture¹

Main policy issues, potential goals and targets

9.1 *Education:* Education has been identified as a priority for the post-2015 development agenda and has been a key component of the Millennium Development Goals (MDGs). As well as intrinsic benefits for its own sake, education is a critical foundation for progress in many other facets of sustainable development, such as poverty reduction, improvements in health, gender empowerment, and environmental protection. It has been proposed that the new framework should draw out these links more explicitly and highlight quality and equality of education as well as quantity.

9.2 *Culture:* Culture is not specifically referenced in the current MDG framework. However, there is growing interest in the importance of culture to overall sustainable development and recognition that culture should be highlighted in the post-2015 development agenda.

Conceptual and methodological tools

9.3 *Education:* In the current MDG framework, the focus is on primary school enrolment, progression and completion rates. Expanding this concept beyond primary education and to measuring the quality of education and its outcomes and how education contributes to overall sustainable development requires careful consideration and recognition of the use of existing data sources, the introduction of new data sources, development of new global indicator definitions and guidance, and the additional resources required to meet these new needs.

9.4 *Culture:* The concept of culture is wide ranging and care needs to be taken to ensure any indicator framework for culture is inclusive and not narrowly defined.

Existing and new indicators

9.5 *Education:* Within the current MDG framework progress in education is monitored under Goal 2 (Achieve universal primary education) and gender aspects are specifically highlighted as part of Goal 3 (Promote gender equality and empower women). School attendance of orphans is monitored under Goal 6 (Combat HIV/AIDS, malaria and other diseases). The specific indicators are:

2.1 Net enrolment ratio in primary education

2.2 Proportion of pupils starting grade 1 who reach the last grade of primary

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Germany, Switzerland, United Kingdom and UNESCO.

2.3 Literacy rate of 15-24 year olds, women and men

3.1 Ratios of girls to boys in primary, secondary and tertiary education

6.1 Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years.

9.6 The Open Working Group (OWG) on Sustainable Development Goals has been recommended to change and expand the current indicators to incorporate pre-primary education and the concept of quality education with measurable learning outcomes at the primary and secondary levels and post-secondary education which prepares students for work and life. This expansion will necessarily create the need for more data, tailored to different country contexts.

9.7 At the international level, the United Nations Educational, Scientific and Cultural Organization (UNESCO)² is responsible for collating education data, specifically the UNESCO Institute for Statistics (UIS)³. Primary data providers are schools, with national level data typically compiled by the Ministry of Education. For the proposed new data requirements the main data sources would be administrative records from schools and institutions of early childhood education, and surveys of households and businesses. UIS already reports on pre-primary enrolment so this could be a starting point for meeting new data demands for pre-primary. New approaches will be needed to ensure reporting of progress in learning outcomes and narrowing inequalities and stronger coordination should be achieved in the reporting of learning achievement surveys. The link to preparedness for the world of work could be drawn out through surveys of employers and analysis of labour market statistics. The International Labour Organization (ILO) already collects some information of this kind, but requires a more systematic approach, and is likely to need additional resources to report upon these aspects.

9.8 *Culture:* UNESCO is the agency responsible for data on culture at the international level. Currently cultural statistics focus on feature film production and cultural employment. The UNESCO UIS has also developed a Framework for Cultural Statistics⁴ to help countries create their own frameworks and data collection processes for the culture sector. This Framework recommends core cultural ‘domains’: Cultural and Natural Heritage; Performance and Celebration; Visual Arts and Crafts; Books and Press; Audio-visual and Interactive Media; Design and Creative Services; and Intangible Cultural Heritage. Potential data sources would be survey data held by National Statistics Offices (NSOs), such as time-use survey data, combined with administrative data from Ministries of Culture and national cultural institutes. UIS are also conducting work on cultural employment, with a view to implementing a global survey on this topic in 2015.

² UNESCO: <https://en.unesco.org/>

³ UNESCO UIS Education data: <http://www.uis.unesco.org/Education>

⁴ UNESCO Framework for Cultural Statistics: <http://www.uis.unesco.org/culture/Documents/framework-cultural-statistics-culture-2009-en.pdf>

Data requirements, challenges and limitations

9.9 *Education:* Availability of education data on access is typically quite good⁵ compared with other aspects of development. There are over 130 developing countries with at least 2 data points since 1990 (excluding modelled data by agency) in the MDG database for indicator 2.1, compared to 75 countries for the indicator for population below the national poverty line and only 18 countries for the maternal mortality ratio indicator. School-based data for indicators 2.1, 2.2 and 3.1 are typically based on administrative records maintained at the school level and collated by national Ministries of Education, usually on an annual basis.

9.10 Disaggregation by sex is available for nearly all education data currently collected through schools. Other important disaggregations are urban/rural breakdowns, by income level, for indigenous groups, disabled children and other marginalised groups. These are generally not available via school-based records and would require greater use and further development of household surveys. The World Inequalities Database on Education (WIDE)⁶ provides lessons on how such surveys can be used to analyse inequalities. When combining data from different sources improved coordination in applying comparable definitions will be required.

9.11 Data on literacy rates are collected via censuses and surveys and are available less frequently than school enrolment data. There is a need to improve data on literacy through efforts to directly assess skills, rather than self-reported information.

9.12 For international comparisons of learning outcomes, a number of international and regional learning assessments have been carried out over the past 15 years, such as the Programme for International Students Assessment (PISA)⁷ of the Organisation for Economic Co-operation and Development (OECD) and the Trends in International Mathematics and Science Study (TIMSS) developed by the International Association for the Evaluation of Educational Achievement (IAE), and regional assessments such as SACMEQ and PASEC. The main limitations of these assessments are differences in definitions of learning outcomes used in the different surveys and that a large number of countries are either not participating or not participating regularly. Challenges include identifying common elements across assessments and measuring a broader range of learning competencies, such as critical thinking, problem solving and digital literacies.

9.13 For new indicators, schools, Ministries of Education and NSOs would require additional resources to meet additional data demands. For countries already struggling to meet existing data needs it could create an unmanageable burden.

⁵ Data availability: <http://mdgs.un.org/unsd/mdg/DataAvailability.aspx> Google Chrome

⁶ World Inequality Database on Education: <http://www.education-inequalities.org/>

⁷ PISA: <http://www.oecd.org/pisa/>

9.14 *Culture*: The collection and submission of culture data would also likely require additional resources. Depending on the indicators chosen, countries may be able to meet new data requirements within their existing statistical programmes, in other cases it may necessitate the addition of new questions to existing surveys, or the establishment and funding of new surveys and administrative data sources.

Conclusions

9.15 The goal of “Equitable Quality Education and Lifelong Learning for All” proposed for the post 2015 development agenda will require a widely expanded data foundation upon which to monitor progress. It will require new global indicator development and guidance (particularly for assessing learning), but in doing this it is important to build on data and techniques already available, such as UIS pre-primary data and various international and regional learning assessments. For culture, more clarity is needed on what the specific goal should be so that relevant supporting indicators can be identified and data collection systems can be developed.

9.16 Indicator selection should take into account the aim of improving the statistical basis for monitoring development. Emphasis on a few high level indicators can detract from developing a well-resourced statistical system which provides regular, high quality data. It needs to be recognised that agreeing new priority areas and indicators creates additional data demands from systems which often already lack capacity to meet existing requirements.

Statistical note 10:

Health and Sustainable Development¹

Main policy issues, potential goals and targets

10.1 Health is an integral part of the post-2015 development agenda. It is a precondition for, an outcome, and an indicator of progress on all three dimensions of sustainable development – economic, social, and environmental.²

10.2 Three of the eight Millennium Development Goals (MDGs) address health issues (child mortality, maternal health, HIV/AIDS and other infectious diseases). However, other health challenges resulting from global emerging phenomenon, such as ageing, changing consumption patterns and lifestyles, and urbanization should be considered in future development frameworks together with universal access to quality health care services.

10.3 Along these lines, the reports of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda³ and Sustainable Development Solutions Network (SDSN) identified health and the health goal “*Maximizing health at all stages of life*”, as a critical component for sustainable development, together with a series of specific targets for mortality and morbidity.⁴ They include MDG-related mortality and morbidity targets, specific targets for mortality due to non-communicable diseases (NCDs), and those on universal health coverage (UHC)⁵. In all proposed targets, equity or progress among the most disadvantaged populations is considered. Furthermore, the need to take action on the social and environmental determinants of health through cooperation with other sectors is also addressed.⁶

10.4 With regard to targets relevant to health, several new and ambitious targets have been put forward at various fora. These include a reduction by 2035 of under-five mortality to less than 20 per 1,000 live births⁷ and of maternal mortality of less than 50 per 100,000 live births⁸, as well as zero new HIV infections⁹. For NCDs, the World Health Assembly endorsed in 2013 the target of 25 per cent reduction of mortality due to cardiovascular

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Germany, United Kingdom, United States of America, Eurostat, OECD, UNICEF, and WHO.

² TST Issue brief, Health and Sustainable Development
<http://sustainabledevelopment.un.org/content/documents/18300406stissueshealth.pdf>.

³ http://www.un.org/sg/management/pdf/HLP_P2015_Report.pdf

⁴ WHO, UNICEF, the Government of Sweden and the Government of Botswana. Health in the Post-2015 agenda. Report of the Global Thematic Consultation on Health, April 2013.

⁵ Universal health coverage is defined as all people receiving the services they need without incurring financial hardship. It includes promotion, prevention, treatment, rehabilitation and palliation. http://www.who.int/universal_health_coverage/en/

⁶ The Future We Want, Rio+20 Political Outcome Document. 2012.

⁷ www.apromiserenewed.org

⁸ F Bustreo, L Say, M Koblinsky, TW Pullum, M Temmerman, A Pablos-Méndez. Ending preventable maternal deaths: the time is now. *The Lancet Global Health* - 1 October 2013 (Vol. 1, Issue 4, Pages e176-e177).

⁹ <http://www.unaids.org/en/aboutunaids/unaidstrategygoalsby2015/>

diseases, cancers, chronic respiratory diseases and diabetes between ages 30 and 70 years by 2025.¹⁰

10.5 UHC has been defined¹¹ as a situation where all people who need health services (prevention, promotion, treatment, rehabilitation, and palliative) receive them, without undue financial hardship. Indicators of access to and coverage of health services include MDG-related coverage indicators (such as skilled birth attendance and immunization), NCD risk factors reduction (such as tobacco use) and treatment of chronic conditions (such as diabetes).¹² The ideal coverage target would be 100 per cent in all population groups. The World Bank and WHO have proposed a target for the poorest segments of populations: at least 80 per cent coverage of key interventions among the bottom 40 per cent of the population in a country. The target for financial risk protection is zero impoverishment due to out-of-pocket health expenses.

10.6 In addition, given the contribution of health to sustainable development and the impact of determinants of health coming from different sectors (social, economic and environmental), it is important to develop synergies between health and the other sectors, including agriculture and food, income and housing.

10.7 It is important to also develop simple ways of global monitoring of progress towards health goals among disadvantaged populations.

Conceptual and methodological frameworks

10.8 Internationally agreed concepts, definitions and methods for health statistics are well established and include standards on mortality and morbidity with agreed classifications used for epidemiological as well as statistical purposes. Examples are WHO's classification on causes of death (International Classification of Diseases-ICD)¹³ and the classification on functioning /disability (International Classification of Functioning, Disability and Health-ICF)¹⁴.

10.9 Other relevant work in the area of health statistics includes the draft Framework for Health Statistics, by the Inter-Secretariat Working Group on Health statistics (ISWG-HS)¹⁵, which outlines the content of health statistics and the relationship between content and the most common sources of health data. An international harmonisation process for health

¹⁰ WHA66.10 Follow-up to the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases. Geneva. 2013.

¹¹ Universal health coverage is defined as all people receiving the services they need without incurring financial hardship. It includes promotion, prevention, treatment, rehabilitation and palliation. http://www.who.int/universal_health_coverage/en/

¹² Draft paper for consultation until 15/2/2014 can be found at http://www.who.int/healthinfo/country_monitoring_evaluation/universal_health_coverage/en/

¹³ <http://www.who.int/classifications/icd/en/>

¹⁴ <http://www.who.int/classifications/icf/en/>

¹⁵ The draft framework for health statistics prepared by the ISWG-HS can be found at: <http://unstats.un.org/unsd/statcom/doc09/2009-10-HealthStats-E.pdf> and <http://unstats.un.org/unsd/statcom/doc11/2011-22-HealthStats-E.pdf>

statistics is also provided to EU Member States by EU legislation on health and safety statistics.¹⁶

10.10 The MDGs offer the framework to monitor progress on reducing child mortality, maternal mortality, and HIV/AIDS, tuberculosis and malaria at both national and international levels. This has triggered noteworthy improvements in health outcomes especially in low and middle-income countries. But, the current MDG framework will need to be adjusted to reflect the post 2015 development agenda.¹⁷ As for NCDs, the World Health Assembly endorsed in 2013 a monitoring framework to track progress on the implementation of the UNGA endorsed political declaration on NCDs¹⁸. A framework for monitoring the many dimensions of UHC is still under development.

10.11 Frameworks have also been proposed for the monitoring of the social and environmental determinants of health. The Commission on Social Determinants of Health made several recommendations on measuring social determinants and integration into health monitoring.¹⁹ The Rio+20 Declaration has stimulated new work on developing targets and indicators for environmental determinants of health, healthy cities, energy, water and sanitation and food and agricultural systems.²⁰

Existing and new indicators

10.12 There are many internationally agreed indicators sets that are used in health and disease monitoring programmes. For instance, as mentioned above, within the current MDG framework, progress in health is monitored under Goal 4 (Reduce child mortality), Goal 5 (Improve maternal health) and Goal 6 (Combat HIV/AIDS, malaria and other diseases), with a set of indicators.

10.13 *Maximizing health at all stages of life:* The monitoring of progress towards sustainable development will include a health status measure. While the indicator “healthy” life expectancy²¹ may be preferable, life expectancy, as a summary measure of mortality at all ages, is more easily understood and measurable in a comparable manner. A relative or absolute target can be set and measurement methods are well-established. The overall indicator of (healthy) life expectancy should be considered a development indicator, not just a health indicator, resulting from the contributions of multiple sectors.

¹⁶ <http://epp.eurostat.ec.europa.eu/portal/page/portal/health/legislation>

¹⁷ Refer to the IAEG-MDG paper on lessons learnt on MDGs monitoring

[http://unstats.un.org/unsd/broaderprogress/pdf/Lesson%20Learned%20from%20MDG%20Monitoring_2013-03-22%20\(IAEG\).pdf](http://unstats.un.org/unsd/broaderprogress/pdf/Lesson%20Learned%20from%20MDG%20Monitoring_2013-03-22%20(IAEG).pdf)

¹⁸ WHA66.10 Follow-up to the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases. Geneva. 2013.

¹⁹ http://www.who.int/social_determinants/corner/en/

²⁰ In addition, OECD, WHO and Eurostat have established the System of Health Accounts (SHA), a global standard in health-accounting. The aim of SHA is to describe the health care system from an expenditure perspective both for international and national purposes <http://www.oecd.org/els/health-systems/asystemofhealthaccounts.htm>

²¹ Healthy life expectancy is a summary measure is defined as the number of years that people are expected to live free from disabilities based on the mortality and morbidity/disability rates in a specific year. Mortality data, combined with data on morbidity/disability/functioning, are the main inputs into this composite indicator.

10.14 Child mortality rates (under-five, infant, neonatal) and cause-specific mortality, including maternal mortality ratio, mortality due to HIV, TB and malaria, and NCD mortality (mortality due to cardiovascular diseases, cancers, chronic respiratory diseases and diabetes between ages 30 and 70 years), should be monitored.

10.15 *Ensuring universal health coverage (UHC)*: The second group of indicators could be brought together under the umbrella of UHC. These include intervention coverage indicators that are part of the health MDGs: immunization (e.g. measles), skilled birth attendance, antenatal care, need for family planning satisfied, antiretroviral therapy, TB treatment coverage (detection and success rates) and insecticide treated bednets.²² The key coverage indicators for the NCDs should include risk factor reductions (e.g. tobacco use, hypertension control²³); and indicators to capture treatment access for chronic conditions and injuries (e.g. diabetes control, normal visual acuity). Disaggregation by variables such as sex, age, income, and geographical area/administration will be critical for all indicators to allow monitoring of progress towards equity goals.

10.16 The target for financial risk protection - zero impoverishment due to out of pocket expenses - can be monitored through a well-established indicator that uses survey-based information on the amount of out-of-pocket health expenses in relation to the adjusted household income.

10.17 The post-2015 development agenda should also include a clear focus on the quality and affordability of health services. It is not enough to assume that access to a health service equates with access to a service that is safe or effective in improving health outcomes. Robust assessment of the quality and affordability of services must be in place in all countries, including low-and middle-income settings.

10.18 *Social and environmental determinants*: The social and environmental determinants of health, such as water and sanitation, air quality and climate change, education, are closely linked with UHC and have critical influence on mortality and burden of disease. Some health determinants have well-established monitoring mechanisms and data sources. The health determinants can be indicators of success of the health goal but also of sustainable policies for energy, cities, water and food, and can therefore inform about the nexus and synergies across several sustainable development goals. For instance, existing indicators of air pollution, traffic injuries, access to certain foods, obesity and stunting, access to water and sanitation are relevant to monitor a good proportion of diseases that can be prevented by policies in relevant sectors, and can be instrumental to establishing the connection across SDGs.

²² http://www.who.int/healthinfo/country_monitoring_evaluation/universal_health_coverage/en/

²³ The coverage indicators would be the inverse: for instance, non-use of tobacco among adolescents and adults and normal blood pressure among those who need treatment.

Data requirements, challenges and limitations

10.19 Even though data availability and quality for many health indicators have improved during the last decade, there are still major gaps that must be addressed to be able to monitor past and new health priorities beyond 2015.

10.20 The mortality indicators will require reliable data on deaths by age, sex and cause. Many countries still do not have well-functioning civil registration and vital statistics systems and can therefore not produce regular and reliable data on fertility and mortality by age, sex and cause of death. Household surveys have helped in filling the gap on child mortality, but less so on adult mortality and causes of death. Comparable data on self-reported health and functioning or on more objective biomarkers on functioning are not available in many countries, making it difficult to compute “healthy” life expectancy on a regular basis. In this connection, the Washington Group on Disability Statistics has developed a short set of questions to be used in population censuses and surveys to measure key aspects of health functioning in a comparable manner.

10.21 Most data on the coverage of interventions and prevalence of risk factors are derived from household surveys. Such surveys are conducted with increasing frequency and provide an indispensable source of coverage, risk factor and financial risk protection statistics by key equity stratifiers. International comparability, however, is an issue, especially for surveys that are not part of international efforts. Furthermore, high quality regular health facility data are needed for several indicators of intervention coverage and to provide regular subnational data about progress and performance.

10.22 The rapidly changing epidemiology in many countries means that household surveys and facility data will have to improve their ability to track trends in all relevant interventions and risk behaviours, which go beyond health MDG monitoring. Current data collection instruments will need to be reviewed and adapted to meet the needs of countries in a comprehensive and comparable manner.²⁴

Conclusions

10.23 A health goal and related targets are an indispensable measure of overall sustainable development. While “healthy” life expectancy is conceptually attractive indicator, life expectancy is the most feasible indicator. Reductions in child mortality, maternal mortality, mortality due to HIV, TB and malaria, and mortality due to the four leading NCDs should be prominent (sub)indicators.

²⁴ The European Statistical System has established guidelines for the international collection of diagnosis-based morbidity data, which have successfully been used in a pilot data collection in the previous decade. The exercise is now launched in all EU countries.

10.24 Indicators on UHC may also be added to monitor progress in the health sector and should include coverage of interventions, for the prevention and treatment of chronic conditions and injuries, as well as indicators of financial risk protection. Indicators on the social and environmental determinants should be also included to the extent possible. All indicators must include multiple equity dimensions, focusing on relatively large disadvantaged populations such as the poorest 40 per cent of the population in a country or in marginalized rural areas.

10.25 Country monitoring should be the basis of a global monitoring framework, with country determined targets and priority interventions, using international standards for data collection and analysis. Global monitoring indicators should be based on a set of indicators that is common to all countries. These should include the majority of the current health MDG indicators and incorporate the core indicators on NCDs and their risk factors.

10.26 There are major health data gaps that must be addressed to monitor the post-2015 agenda. These include the strengthening of birth and death registration systems, with reliable cause of death, the implementation of household surveys that include all priority health areas and the improvement of the quality of health facility reporting systems using innovative approaches.

Statistical note 11:

Population Dynamics¹

Main policy issues, potential goals and targets

11.1 Population dynamics refer to changes in the size, age-sex structure and location of populations. Because of their important interlinkages with development, population dynamics were one of the eleven major themes considered in the consultations on priorities for the post-2015 development agenda and sustainable development goals.

11.2 The Programme of Action (PoA) of the 1994 International Conference on Population and Development (ICPD) is the main internationally agreed text addressing the interrelationship between population dynamics and development. It includes a set of qualitative and quantitative goals that are mutually supportive and of critical importance to population and development objectives.² In 2010, the General Assembly decided to extend the PoA and the Key Actions for its further implementation beyond 2014 and ensure its follow-up in order to fully meet its goals and objectives³.

11.3 The Rio+20 Outcome document, “*The Future We Want*,”⁴ urges countries to seize the opportunities and address the challenges associated with demographic change, including migration, and encourages the use of population data and projections in national development planning.

11.4 Moreover, the report of the High-level Panel (HLP)⁵ argues that demographic change, international migration and urbanization will be key factors shaping the world between now and 2030. Noting that access to markets, including labour markets, is the surest way to escape poverty, the HLP recommends to improve the governance of the movement of people, goods and services and advocates for better and disaggregated data.

11.5 The 2013 High-level Dialogue on International Migration and Development confirmed the need to leverage the opportunities as well as to address the challenges of migration for countries of origin, transit and destination alike. The Declaration of the 2013 High-level Dialogue recognized that human mobility should be adequately considered in the elaboration of the post-2015 development agenda.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Cameroon, Germany, Switzerland, United States of America, Eurostat, UNFPA and UNPD.

² Among these objectives and goals are: sustained economic growth in the context of sustainable development; education, especially for girls; gender equity and equality; infant, child and maternal mortality reduction; and the provision of universal access to reproductive health services, including family planning and sexual health.

³ Resolution A/RES/65/234

⁴ <http://www.uncsd2012.org/content/documents/727The%20Future%20We%20Want%2019%20June%201230pm.pdf>

⁵ http://www.un.org/sg/management/pdf/HLP_P2015_Report.pdf

Conceptual and methodological frameworks

11.6 Population dynamics pose significant challenges to development but also provide unique development opportunities. As mentioned above, the Programme of Action (PoA) of ICPD represents the main conceptual framework, emphasizing the complex linkages between population and development, and focusing on meeting the needs of individual women and men, rather than on achieving demographic targets. The key to this new approach is empowering women and providing them with more choices through expanded access to education and health services, skill development and employment, and through their full involvement in decision-making processes at all levels.

11.7 In the current Millennium Development Goal (MDG) framework, population dynamics *per se* are not specifically mentioned, but are an overarching theme. They underlie almost all the MDGs, in terms of relevant indicators and the formulation of targets and as denominators for and in the calculations of the indicators.

11.8 In the new post-2015 development agenda, the importance of population dynamics for development is increasingly being acknowledged. Yet, the new development agenda is not expected to set goals and targets on population size, age-sex structure and by location, especially as the setting of such targets is often associated with policies that violate fundamental human rights and freedoms. Instead, it is expected that goals and targets, where possible, are informed by population estimates and projections.

11.9 The thematic consultation on population dynamics identified priority issues that have a bearing on sustainable development in five main areas: (a) Strengthening human capital throughout the life course, including health, education, work, social protection, and the elimination of all forms of discrimination and violence; (b) Promoting the developmental benefits of migration; (c) Creating livable and sustainable cities for growing population; (d) Collecting, analyzing and using population data and projections; and (e) Developing and strengthening partnerships on population.

Existing and new indicators

11.10 Among the eight MDGs, Goal 4 (Reduce child mortality), Goal 5 (Improve maternal health) and Goal 6 (Combat HIV/AIDS, malaria and other diseases) include population and health-related targets and indicators to measure progress⁶. Indicators used to assess the progress of targets under Goal 4 are *the under-five mortality rate, the infant mortality rate, and the proportion of 1 year-old children immunized against measles*. Under Goal 5, the improvement of maternal health has been measured by six indicators, including *maternal mortality ratio, contraceptive prevalence rate, and unmet need for family planning*. The progress of three targets of Goal 6 concerning HIV/AIDS, malaria and other diseases has

⁶ The list of MDG indicators are available at: <http://mdgs.un.org/unsd/mdg/default.aspx>

been assessed by nine indicators, ranging from *HIV prevalence rate to incidence, prevalence and death rates associated with tuberculosis*.

11.11 Besides the indicators listed above, the thematic consultation on population dynamics and various follow-ups have identified additional indicators associated with the priority issues considered under the five main areas. Some examples of possible indicators are listed below:

(a) *Strengthening human capital throughout the life course, including health, education, work, social protection, and the elimination of all forms of discrimination and violence.*

- Prevalence of female genital mutilation/cutting (for relevant countries only)
- Proportion of women aged 15-49 years subjected to physical or sexual violence in the last 12 months by an intimate partner
- Percentage of women aged 20-24 years old who were married or in a union before age 18
- Transition rate to secondary education, by sex

(b) *Promoting the developmental benefits of migration*

- Cost of transferring remittances per USD200 and USD500
- Recruitment fees paid by the employee
- Number of bilateral agreements that include provisions for the recognition of educational qualifications and skills or allow for the portability of pensions and other benefits

(c) *Creating livable and sustainable cities for growing populations*

- Share of urban households with access to safe, sufficient water
- Share of urban households served by safe sanitation services
- Proportion of urban population living in adequate and affordable housing conditions
- Percentage of households with access to electricity
- Proportion of urban residents voting in local elections and using participatory approaches in public affairs.

(d) *Collecting, analyzing and using population data and projections*

- Birth registration coverage and death registration coverage (at the national level)
- Number of countries with birth registration coverage of at least 90%, by region
- Number of countries with death registration coverage of at least 90%, by region
- Statistical capacity indicator (WB measure of national statistical capacity) or
- Periodicity of the Population and Housing Census, DHS or MICS.

(e) *Developing and strengthening partnerships on population*

- Proportion of ODA to population sector
- ODA to health, total, and proportion going to reproductive health care
- ODA to health, total, and proportion going to family planning

11.12 Furthermore, all development goals and targets that seek to promote genuine progress for people will need to take into account projected changes in population dynamics. For example, while even least developed countries made progress towards the objective of poverty reduction, today more people live in extreme poverty than ever before. This is because progress in poverty reduction did not keep pace with population growth. Similarly, progress in reducing the number of slum dwellers did not keep pace with all the people who moved to slums. It is not enough to focus on meeting the needs of today's generation, but future goals and targets must also anticipate and plan for the needs of the future generations.

Data requirements, challenges and limitations

11.13 The underpinnings for measuring population dynamics are data from censuses and civil registration of vital events collected by national statistical systems. Where statistical systems are not sufficiently developed, estimates of fertility and mortality are currently obtained from sample surveys that also provide important sources of information on reproductive, sexual, maternal and child health. For migration, administrative data are an important source for tracking flows of people, and the number of refugees as well as on victims of human trafficking.

11.14 Much has been already done by various international organizations to collect, compile and disseminate demographic statistics at the global level. The United Nations Statistics Division (UNSD) collects key demographic statistics from population censuses and civil registration through its Demographic Yearbook, the main global repository for demographic data. Standardized, consistent estimates of many demographic indicators needed to assess and monitor the levels and trends in population size, age-sex structure, rural-urban populations, as well as international migrant stocks are available from the United Nations Population Division (UNPD)⁷. The office of the United Nations High Commissioner for Refugees (UNHCR) reports on refugees and others who are displaced because of persecution and conflict.

11.15 About half of countries, however, do not report official demographic data with the detail necessary.⁸ Many countries still do not have adequate civil registration systems in place and, as a result, vital statistics remain incomplete and not sufficiently reliable. Population censuses, which are an important source of data on key demographic aspects of the population, are normally carried out only once in ten years.⁹ Substantial estimation work is therefore required to close the data gaps. Sample surveys have been useful in generating data that is currently not produced by official statistics, but their frequency and the scope covered vary among countries.

⁷ See <http://www.un.org/en/development/desa/population/>; World Population Prospects: <http://esa.un.org/wpp/>

⁸ See <http://esa.un.org/wpp/other-information/faq.htm>

⁹ See <http://unstats.un.org/unsd/demographic/sources/census/censusdates.htm>

11.16 To date, consistent population estimates and projections at sub-national level are not available for all countries and areas of the world. Similarly, the existing data on neither rural and urban populations nor internal migration suffer from the issue of international comparability, as the definitions and underlying concepts differ between countries. Addressing population dynamics at sub-national level is not at all straightforward and would require massive efforts and investments in data collection, data quality assessment, and estimation and projection work. Given the current institutional framework and resource availability, such an endeavor cannot be realistically achieved.

Conclusions

11.17 Population dynamics are recognized as one of the key components in the current discussion on the new development agenda. Much data needed to monitor progress are already regularly collected and produced in countries, using the framework of ICPD PoA and MDGs. However, further efforts and investments are still needed to fill many gaps in data coverage and quality, measurements and analysis. In particular, more emphasis should be placed on the needs to disaggregate data not only by sex, age and location, but also by particular groups of the population and at sub-national level, in order for development policies and investments to be fully evidence-based and sustainable.

11.18 With a view forward towards the sustainable development goals and the post-2015 development agenda, is essential to (i) have broad list of targets and indicators related to population issues, as mentioned above; (ii) ensure that all development goals and targets that focus on improving people's lives are informed by population data and population projections; and (iii) disaggregate all pertinent data by age, sex and location in order to support a more systematic tracking of inequalities as regards progress towards development goals and targets.

Statistical note 12:

Sustained and inclusive economic growth and infrastructure development and industrialization¹

Main policy issues, potential goals and targets

12.1 Prosperity for all and eradication of poverty could be the outcome of economic growth, if the benefits of economic growth are shared between countries and with all segment of society within the countries. Current projections² indicate that the global output is set to double by 2030. Moreover, on current trajectories, the per capita income gap between developed and developing countries will have narrowed but still remain large. This rate of growth cannot be taken for granted, however, and we must redouble our efforts to ensure that it can continue at these current levels, and be made more inclusive and sustainable, through structural transformations in every economy.

12.2 The structural transformation is envisaged in the diversification of the production structure and in particular the manufacturing sector with a commensurate enhancement in the level of investment in infrastructure such as transport (road, rail, air and inland and sea); energy generation and distribution; water collection, treatment, supply and distribution; information, communication and technology, etc. Through its backward and forward linkages in industrial production, it is expected under this industrialisation growth path that its pull-effects on other sectors will stimulate growth in agricultural and services sectors. This in turn can generate technological change and innovation, fuel productivity increases through shifts in global value added chains, create employment, and increase wages and profits.

12.3 Industrialization remains the important aspect of the development agenda of a large number of countries. Poverty, hunger, disease and social conflicts persist in countries that are lagging behind in industrialization. As industry develops, it drives an increase of value addition and enhances the application of science, technology and innovation, thereby encouraging greater investment in skills and education, and thus providing the resources to meet broader, inclusive and sustainable development objectives.

12.4 While economic growth and related economic prosperity are major policy objectives for most countries, it should be pursued in a sustainable and equitable manner. Therefore, sustainable pathways should reflect inclusive and sustained economic growth that improve

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, the Netherlands, Sweden, United Kingdom, United States of America, UNIDO.

² High Level Panel report on the Post-2015 Development Agenda, A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development

the material well-being and quality of life in general and avoid reaching the limits of our natural resources and ecosystems.

Conceptual and methodological tools

12.5 The measurement of economic growth has traditionally been a fundamental element of the national, regional and global statistical system. Compilation of GDP and other macro-economic statistics are governed by a global statistical standard called the System of National Accounts³. These statistics are compiled by almost all countries of the world which is collected by international and regional organisations and held in their statistical databases. Also, the recently updated methodological guidance for the measurement of industrial activities with annual and infra-annual frequency is available in the form of International Recommendations for Industrial Statistics 2008 (IRIS 2008) and the International Recommendations for the Index of Industrial Production 2010 (IRIIP 2010). In this context, also the measurement disaggregated by economic activity and products are relevant which could be organised following the International Standard Industrial Classification revision 4 (ISIC rev 4), the Central Product Classification ver 2 (CPC) and the Harmonised System 2012 (HS).

12.6 It is well recognised that GDP is a measurement of output and not of well-being. Therefore, the statistical community during the past decades has explored and developed broader measures of progress. Progress is about improvements in human well-being and its sustainability over time, where well-being is a multi-dimensional concept that covers material living standards and the non-monetary aspects of quality of life. The work of developing broader measures of progress can be grouped broadly under the three conceptual pillars of material living standards, quality of life and sustainability.

12.7 The focus on economic growth in terms of GDP is understandable, because it provides a simple and widely understood macroeconomic measure of economic activity. However, measures of material well-being have to go beyond GDP. Measuring material living standards has an emphasis on the household perspective. It requires looking beyond GDP as output measure at income measures to market and non-market activities, but also at assets and consumption expenditures. Moreover, it includes inequality and accessibility measures on how consumption, income and assets are distributed among individuals, households, population groups and future generations. The Organisation for Economic Co-operation and Development (OECD) building on the project Measuring Well-Being and Progress of Societies and as part of its Better Life Initiative has recently released methodological guidance on distributions measures on household wealth⁴ and joint

³ System of National Accounts 2008, United Nations, European Commission, International Monetary Funds, Organisation for Economic Co-operation and Development, World bank

⁴ OECD Guidelines for Micro Statistics on Household Wealth, 2013

distributional analysis of income, consumption and wealth as measures of material well-being⁵.

12.8 Quality of life is only partially dependent on people's objective conditions and capabilities⁶. Economic resources, while important, are not all that matters for quality of life. Health, education, job satisfaction, work conditions, environmental conditions, governance, civic engagement, security, human contact and personal activities are all fundamental to quality of life. Measuring quality of life requires looking at these elements as a whole and includes subjective and objective multi-dimensional measures of well-being and comprehensive assessment of inequalities. Again the OECD Better Life Initiative has provided guidance⁷ with further analysis on well-being in the economic and financial crisis, in the workplace, by gender and sustainability over time.

12.9 Sustainability poses the challenge of determining if the current level of well-being can be maintained for future generations. Sustainability over time can be assessed by looking at the set of key economic, environmental, social and human assets transmitted from current to future generations, and how these assets are affected by today's actions, policies and behaviours. The assessment of sustainability necessitates an effort to advance existing macroeconomic accounting frameworks as the System of National Accounts with a system approach of stocks and flows to capture the complex interactions of the economy, society and environment. An internationally agreed statistical standard has now been adopted by the Statistical Commission, the System of Environmental-Economic Accounting 2012 Central Framework to provide the guidelines for generating these integrated statistics and accounts.

12.10 Another major initiative in the measures of sustainability and well-being has been the work undertaken by the UNECE/Eurostat/OECD Task Force for Measuring Sustainable Development (TFSD). The *Recommendations on measuring sustainable development*⁸ prepared by the Task Force were recently endorsed by the Conference of European Statisticians (CES). The Recommendations include a conceptual framework and suggested indicators. They present a flexible system that can measure sustainable development from a variety of different perspectives and can be applied in developed and developing countries. The guiding principle is that sustainable development is about the wellbeing of current generations ('here and now') and the impact on future generations ('later') or other countries ('elsewhere'). Importantly, the measurement of inequalities and subjective wellbeing measures are also included in the framework.

12.11 The European Commission, since 2007, has engaged in the debate about the limitations of GDP as a measure of key societal goals such as well-being and sustainability,

⁵ OECD Framework for Statistics on the Distribution of Household Income, Consumption, and Wealth, 2013

⁶ Capabilities of people are the extent of their opportunity set (a combination of various "doings and beings") and of their freedom to choose among this set.

⁷ OECD How's life? 2013 Measuring well-being

⁸ <http://www.unece.org/stats/sustainable-development.html>

which accumulated in the drafting of a Resolution. In 2011, the European Parliament adopted this Resolution on GDP and beyond: Measuring progress in a changing world.⁹ The Resolution stresses the need to develop clear and measurable indicators for measuring medium- and long-term economic and social progress. The Resolution called for the development of indicators that focus more closely on the household-level perspective, reflecting income, consumption and wealth and stressed the need to develop clear and measurable indicators that take account of climate change, biodiversity, resource efficiency and social inclusion. It underlined the need to measure quality of life in societies and assign a greater role to indicators which measure important factors such as health, education, culture, employment, housing, environmental conditions etc. The Resolution supported fully the establishment of a solid legal framework for the European Environmental Economic Accounts as a positive step in the ‘GDP and beyond’ process.

12.12 While the conceptual development on the broader measures of progress by the official statistical communities has been significant in the recent decades, there are still important thematic areas like peace and security, governance and global partnership where further work is needed.

Existing and new indicators

12.13 Measurement of sustainable development has a history of about two decades. Work at United Nations level started in the 1990s and the first United Nations recommendations for sustainable development indicators were published in 1994 (and updated in 2006). Based on the methodological tools discussed in section B, the latest development is the 2013 *CES Recommendations on Measuring Sustainable Development*. The Recommendations take into account work by individual countries and by Eurostat, OECD and other international organizations related to measuring sustainable development, such as European Commission's *GDP and Beyond*, the EU Sponsorship Group on Measuring Progress, Well-being and Sustainable Development, the OECD's *Measuring the Well-being and Progress of Societies*, and the Stiglitz-Sen-Fitoussi report. Meanwhile, many countries adopted sustainable development strategies and related indicator sets to measure progress.

12.14 While overall economic growth is measured by GDP, it is imperative to look into the contribution of different sectors to economy in order to understand the pattern of structural transformation. As a country progresses from a traditional to a market economy, the contribution of the industrial sector as well as the overall GDP rises. Therefore, statistical indicators such as share of manufacturing value added (MVA) in GDP and MVA per capita reflect this transformation of an economy to higher growth trajectories. For instance, currently, the average per capita MVA of industrialized countries is ten times higher than that of developing countries and ninety times higher than average of least developed countries¹⁰.

⁹ <http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&reference=A7-2011-0175&language=EN&mode=XML>

¹⁰ UNIDO, International Yearbook of Industrial Statistics, 2013

12.15 Sustainable development requires that the natural resources are efficiently used in production processes and the environmental footprint of the economy is reduced. Industrial sectors consume almost one-third of energy resources and account for significant portion of emission. Statistical offices are increasingly applying the new set of indicators for measuring the efficiency of the use of material and energy resources per unit of output. Existing UN recommendations provide the methodology for collecting of not only output related data, but also the details on material, energy and capital input. Aspirations of nations to accelerate industrial growth cannot be separated from reducing the environmental footprint of the overall economy. As the impact of production on environment differs by type of product and technology used, it is essential that environment related indicators are compiled at the sector level. These indicators will assist policy makers to understand the trade-offs between growth in income and jobs versus resource intensity and overall environmental impact.

12.16 Measures of inclusiveness are to reflect the social equality in the process of transformation. Currently statistics are compiled related to the participation of women in industrial production. While the participation rates have improved in many countries, the indicator related to wage gap has become more relevant. Similarly, the regional disparity index has been introduced to monitor the regional inclusiveness of industrial growth at country level.

12.17 Many of the proposed indicators in the CES Recommendations correspond to the goals and targets for the post-2015 development agenda proposed by the Report of the High Level Panel of Eminent Persons and by other reports like those from the Sustainable Development Solutions Network. The TFSD that prepared the CES Recommendations made an assessment of the availability of the proposed 94 indicators across 46 countries¹¹. The analysis covers the statistical databases of the UN, the OECD and Eurostat. The analysis was performed over the period February 2012 - April 2012 and counts the numbers of data points available for these 46 countries since 2000. Also Australian Bureau of Statistics as part of its programme on Measures of Australian Progress (MAP)¹² has developed an inventory of practices on measures of progress that further extends the range of country practices.

Data requirements, challenges and limitations

12.18 While the debate on the post 2015 development agenda is still on-going, a broad consensus seems to emerge that the post 2015 development framework does include goals, targets and indicators, as in the case of the MDG framework. That said, the post 2015 development framework will be different in terms of scope by covering the economic, social and environment dimensions of sustainable development. Moreover, monitoring and

¹¹ Members of the European Union and/or the OECD, Brazil, Russia, India, Indonesia, China, and South Africa, detailed results are available at: http://www.unece.org/fileadmin/DAM/stats/documents/sustainable_development/Data_availability.pdf.

¹² Measures of Australia's Progress - Aspirations for our Nation: A Conversation with Australians about Progress , 2011-12

reporting on these dimensions of sustainable development paths have to inform the multi-dimensional policies in an integrated manner. Also it is expected that the framework will not only contain universal and global goals and targets, but also provide sufficient room for adaptation to country specificities through disaggregated measures of inclusive economic and social development and environmental stewardship.

12.19 The analysis undertaken in the *CES Recommendations on measuring sustainable development* has determined that a large number of expected indicators are produced by official statistics, following the international statistical standards like the System of National Accounts 2008 and the System of Environmental-Economic Accounting 2012 and the related macroeconomic and sectorial statistics standards.

12.20 The challenge is that national statistical capacity and best practices are to be developed based on the implementation of existing and new methodological standards for official statistics. It requires the strengthening of both the institutional environment and statistical infrastructure and operations of the national statistical system in general, and the national statistical organisations in particular. While moving away from an ad-hoc indicator approach to a broad based, balanced and sustainable national statistical capacity building approach determined by country policy priorities and ownership, much more collective action is needed at national, regional and global level to meet these challenges, in particular in developing countries. International and regional organisations have a key role in providing technical assistance and coordinating statistical capacity building. This work is being executed in close cooperation with the multi-lateral development banks.

12.21 The global statistical community through the Statistical Commission has expressed the need and supported the initiative to scale up the implementation of the SNA 2008 and SEEA 2012. In the last year, all regions have adopted strategy plans for this implementation, which are being translated into national strategy plans. In addition to the strengthening of basic, sectorial and macro statistics for the economy and the environment, also considerable capacity building activities are undertaken in population, social and demographic statistics, including the strengthening of multi-purpose household survey and use of administrative data for statistical purposes such as vital statistics and civil registration.

Conclusions

12.22 The conceptual framework and suggested indicators for measuring sustainable development presented in the *CES Recommendations on measuring sustainable development* provides a good starting point for the monitoring of sustained and inclusive economic growth. The analysis undertaken by the TFSD has further determined that a large number of expected indicators can be produced by official statistics compiled for the implementation of SNA 2008 and SEEA 2012. This presents a move away from an ad-hoc indicator approach to a broad based, balanced and sustainable national statistical capacity building approach determined by country policy priorities, ownership and statistical information management.

12.23 The Statistical Commission as apex body of the official statistical community has central role in supporting the statistical agenda of the post-2015 development programme. In its endeavour to contribute to the post-2015 development agenda, it will mobilize its global partnership consisting of policy and decision makers in the public and private sector, representatives of academia, civil society, think tanks and corporate sector, parliamentarians, media and the general public to elevate the use of official statistics in sustainable development. With the recognition of official statistics for decision and policy making, the official statistical community will contribute to the data revolution needed for the transformational agenda on accountability and transparency.

Statistical note 13:

Macro policy questions (including international trade, international financial system and external debt sustainability)¹

Main policy issues, potential goals and targets

13.1 We are living in an interconnected global economy, which can provide us considerable rewards in growth in output, income, employment, wealth and reduction in poverty. However, the recent economic and financial crisis in 2008 has made evident that the risks of these pathways are considerable, because of the domestic and cross border vulnerabilities of the national economies and the uneven distribution of those rewards leading to rising inequalities in income, employment and wealth and rising poverty across countries and within countries.

13.2 Already an open, rule-based, predictable, non-discriminatory trading and financial system was identified under the Millennium Development Goals programme (i.e. MDG 8), with a particular focus on official development assistance, market access and debt sustainability. For the post 2015 development agenda, it is expected that these macroeconomic issues of MDG 8 are placed in a broader macroeconomic policy framework that includes other pertinent issues such as cross border and domestic vulnerabilities, environmental impacts of production, consumption, domestic resource mobilisation, and imbalances in trade in goods and services, value added, income, infrastructure employment, financial debt and use of natural resources. These indicators from the macroeconomic frameworks are to be informed by existing and recently revised international standards to ensure international comparability.

Conceptual and methodological tools

13.3 Achieving an enabling macroeconomic policy framework to promote equitable and sustainable development need to begin with a clear understanding of the underlying factors that drive the growth of national income, including growth rates of capital accumulation, changes in employment rate, labour and capital productivity, changes in the terms of trade and the linkages between macroeconomic policies and industrial and sectorial policies. This gives rise to the need, not only to monitor progress but also to evaluate whether or not goals are being achieved. To obtain this overview of the economic processes data need to be organised in a framework that integrates and reconciles the data.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, France, India, United Kingdom, United States of America and Eurostat.

13.4 The System of National Accounts² (SNA) describes a coherent, consistent and integrated set of macroeconomic accounts that provides an overview of economic processes, recording how production is distributed among consumers, businesses, government and foreign nations. It shows how income originating in production, modified by taxes and transfers, flows to these groups and how they allocate these flows to consumption, saving and investment.

13.5 The national accounts support macroeconomic and sectorial policies including those related to employment, inflation, international trade, and finance by supporting the understanding and forecasting of the determinants of growth and productivity of the economy as it provides a consistent and coherent data set for output, prices, inputs of material and services, energy use and labour and capital as factors of production. Consequently, the national accounts provide an overarching framework for macroeconomic statistics to facilitate economic analysis and policy formulation.

13.6 These national accounts statistics are complemented by three sets of macroeconomic statistics - balance of payment statistics³, government finance statistics⁴ and monetary and financial statistics⁵. Together these four macroeconomic statistics sets inform the real, fiscal, monetary and financial sector policy frameworks from which coherent and consistent sets of national accounts related indicators are determined. In addition to this, for trade-related purposes, the international merchandise trade statistics⁶ and international statistics on trade in services⁷ are prepared on cross border trade flows in goods and services, including foreign affiliates undertaking services activities. For external debt related issues, the information is collected and disseminated according to the external debt statistics Guide⁸. Further, there is a long practice in compilation of foreign direct investment⁹. With the release of the System of Environmental-Economic Accounting 2012 Central Framework¹⁰, the family of macro accounts is further extended to inform about sustainability aspects of production, consumption and accumulation by describing the relationship between the economy and the environment. More specifically, the SEEA measures the (i) the physical flows of materials and energy within the economy and between the economy and the environment; (ii) the stocks of environmental assets and changes in these stocks; and (iii) economic activity and transactions related to the environment.

² The latest version of the SNA is the System of National Accounts 2008 <http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf>

³ IMF's Balance of Payments and International Investment Position Manual, 6th Edition

⁴ IMF's Government Finance Statistics Manual, 2013 (forthcoming)

⁵ IMF's Monetary and Finance Statistics Manual and Compilation Guide, 2014 (forthcoming)

⁶ The International Merchandise Trade Statistics: Concepts and Definitions, United Nations, 2010,

⁷ Manual on Statistics of International Trade in Services, United Nations, 2010

⁸ IMF's External Debt Statistics: Guide for Compilers and Users, 2003

⁹ OECD Benchmark foreign direct investment, 4th Edition

¹⁰ System of Environmental-Economic Accounting 2012 –Central Framework, United Nations, 2012

Existing and new indicators

13.7 The current MDG framework put the emphasis on human and social development, setting goals related to reducing poverty and improving education and health in developing countries, without attention to the transformation of productive structures and capacities. Consequently, there are no MDG indicators that directly reflect economic growth, industrialization and infrastructure development.

13.8 National accounts aggregates, such as GDP and GDP per capita, are widely used as summary indicators of economic activity. However, it has long been recognised that these aggregates and other macro-economic statistics, while useful in their own right, are not the most suitable measures of people's material conditions. The focus on GDP as the single most important measure of economic performance and social progress may have driven a wedge between headline statistics and ordinary people's perceptions of their economic conditions. The System of Environmental-Economic Accounting 2012 Central Framework will help support a wider set of indicators related to sustainable development and green growth, which aims at fostering economic growth while ensuring that natural resources continue to provide the resources and environmental services on which well-being relies. The environmental-economic framework will partially allow for indicators linking poverty reduction and natural resource management. Interdependencies related to food security and nutrition should also be considered. These issues are central to pro-poor growth and social protection policies in developing countries.

13.9 The national accounts provides valuable information on household material conditions at the macro level, such as, measures of household disposable income; social transfers in kind; consumption expenditure; investment; and assets and liabilities. By combining these macro level aggregates with micro sources (surveys, administrative records, and censuses), it would be possible to derive measures of the distribution of income, consumption and wealth across household groups. Guidance in the area of distribution has been recently released under the OECD Better Life Initiative¹¹.

13.10 In addition to producing consistent and coherent short term and annual statistics for macroeconomic aggregates for the real sector, the national accounts framework also provides macroeconomic aggregates relating to the financial and non-financial corporations, government and household sectors of the economy, and their relationship with the rest of the world. Integrated socio-economic, environmental-economic and macroeconomic statistics enable the observation of key variables assessing policy change in the structure of the economy, examining its impact on the determinants of growth (labour, capital, energy, materials and natural resources), on specific goods and services producing industries, consumption and accumulation, the effects across regions of the country and on size classes of enterprises and ownership. New statistical work proposed by the Friends of the Chair on

¹¹ OECD Framework for statistics on the distribution of household income, consumption, and wealth, 2013.

International Trade and Economic Globalisation under the Statistical Commission will also be useful in this context as it brings out the positioning of countries in global value chains and the extent to which they benefit from international trade, and will provide input to the more analytical carried out by the OECD and the WTO on Trade in Value Added (TiVA).

13.11 Many different indicator set with different frequencies can be considered for the real, fiscal, monetary, and external sector, such as those described by the UN in its Handbook on Use of Macro accounts in Policy Analysis¹², used by the IMF for the Special Data Dissemination Standards¹³ and by Eurostat for the Principal European Economic Indicators¹⁴.

13.12 Countries report their statistics for the real, fiscal, monetary and external sectors to international agencies such as the Bank of International Settlement, Eurostat, OECD, IMF, World Bank and United Nations, which are maintained in their own data bases but also in a shared database such as the one maintained by the Interagency Group on Economic and Financial Statistics on Principal Global Indicators¹⁵. Work is underway among the international organisations to introduce more efficient collections to reduce the response burden on countries.

Data requirements, challenges and limitations

13.13 Although the internationally agreed recommendations for the compilation of national macroeconomic statistics have been established for a long-time and are used in many countries, there are still large differences in the degree of application, coverage and quality of the data collected worldwide. In addition, indicators that require disaggregated data by gender, geography, income, industry and other categories are not always available. Ongoing concerted capacity development efforts should be scaled up to improve the statistical production process of countries that are not able to provide the required data. This scaling up at global and regional level should contribute to better alignment and coordination of the delivery of technical assistance at country level based on an integrated statistics approach.

Conclusions

13.14 To measure progress with sustainable economic growth requires a shift away from the ad-hoc development of indicators towards the development of integrated information at the country level based on country priorities. Recognizing the significance of an integrated approach for increasing the consistency and coherence of economic, environment and social statistics would enhance the quality and analytical value of the information. This recognition would require a systematic development of an agreed set of integrated statistics based on existing internationally agreed macroeconomic and macroeconomic-environmental

¹² Handbook of National Accounting. Use of Macro Accounts in Policy Analysis. Studies in Methods. Series F No. 81. United Nations. New York

¹³ IMF's Special Data Dissemination Standard, Guide for Subscribers and Users 2013

¹⁴ Principal European Economic Indicators, a statistical guide, Eurostat, 2009

¹⁵ <http://www.principalglobalindicators.org/>

accounting frameworks for measuring a country's economic activity and its impact on the environment and social conditions of the population in an increasingly interconnected global economy. The national strategies for development of statistics should be prioritized accordingly to meet the broader needs to inform macroeconomic developments. Moreover, high level political support should be mobilized to fund the capacity development efforts in institutional coordination and governance structures, statistical infrastructure and operations to improve the statistical production process of countries that are currently not able to produce the required data.

13.15 When preparing a programme for developing a consistent framework for measuring a country's economic activity, it is necessary to take into consideration the national and regional policy needs to determine the scope and detail of the macroeconomic and macroeconomic- environmental accounts, social indicators and supporting statistics to inform policy makers. The chosen scope and detail also determine the data sources needed for timely and accurate estimates of the statistics.

13.16 By mapping the statistical requirements – where you want to go, and the outcome of an assessment of the statistical system – where you are, it is possible to determine the required actions – how to get there. These required actions should be translated into an implementation programme, providing key features and deliverables that are specific, measurable, relevant and can be carried out within a specific time frame.

Statistical note 14:

Energy¹

Main policy issues, potential goals and targets

14.1 Modern energy services are crucial to human well-being and to a country's economic development. Access to modern energy is essential for the provision of clean water, sanitation and healthcare and for the provision of reliable and efficient lighting, heating, food, cooking, transport, and telecommunication services. On the other hand, environmental and resource management considerations make it necessary to curb the use of energy from non-renewable sources through improving energy efficiency and increasing the share of renewable sources in the production and use of energy.

14.2 Overarching policy objectives are usually framed against three major categories: improving energy distribution and access; managing energy supply and demand; and reducing pressures of energy supply and use on the environment². In declaring 2012 the "International Year of Sustainable Energy for All," the UN General Assembly established three global objectives to be accomplished by 2030: to ensure universal access to modern energy services, to double the global rate of improvement in global energy efficiency, and to double the share of energy from renewable sources in the global energy mix. Emerging proposals for dedicated sustainable development goals and targets on energy including those in the High Level Panel Report tend to focus on these three main objectives.

14.3 Sustaining momentum for the achievement of the SE4ALL objectives will require a means of charting global progress over the years leading to 2030. Construction of the necessary framework has been coordinated by the World Bank/Energy Sector Management Assistance Program (ESMAP) and the International Energy Agency (IEA), in collaboration with 13 other agencies. The Sustainable Energy for All (SE4ALL) initiative's global tracking framework³ set 2010 as the starting point against which the progress of the initiative be measured. The framework provides an initial system for regular global reporting, based on indicators that are technically rigorous and at the same time feasible to compute from current global energy databases and allow for progressive improvement over time.

Conceptual and methodological tools

14.4 The United Nations *International Recommendations for Energy Statistics*⁴ provide data compilers with a complete set of recommendations covering all aspects of the statistical

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Denmark, the Netherlands, United Kingdom, FAO, DESA/DSD, UNDP.

² Mitigating disaster risks can also be policy objective when determining energy policies.

³ <http://www.sustainableenergyforall.org/tracking-progress>

⁴ <http://unstats.un.org/unsd/statcom/doc11/BG-IREs.pdf>

production process framework, from basic concepts, definitions and classifications to data sources, data compilation strategies, energy balances and accounts, data quality and statistical dissemination. Energy statistics deal with the collection and compilation of information on production, imports, exports and domestic use of energy products on the basis of specific surveys and by using for example business statistics, foreign trade statistics and administrative data. Energy balances reorganise the basic energy statistics by confronting and consolidating the supply and use sides, and by highlighting the transformation of energy within the economy. The Standard International Energy Product Classification (SIEC) is a classification of products relevant for energy statistics which has been developed as part of the preparation of the International Recommendations for Energy Statistics (IRES).

14.5 The *System of Environmental-Economic Accounting for Energy* (SEEA-Energy)⁵ is a multi-purpose conceptual framework for organizing information, both physical and monetary, on energy. It supports analyses of the role of energy within the economy and of the relationship between energy-related activities and the environment, such energy use and energy related emissions. Energy accounts as described in SEEA Energy use definitions, principles and classifications that are consistent with the national accounts allowing for the derivation of consistent and comparable data and indicators, such as e.g. net domestic energy use. SEEA-Energy is a subsystem of the SEEA Central Framework (SEEA CF) which was adopted by the UN Statistical Commission as the international statistical standard for environmental economic accounts in 2012. However, the implementation of the SEEA CF and the SEEA-Energy is a challenging task and depends on the availability of the necessary energy and economic statistics.

14.6 Further practical guidance in the implementation of energy statistics, energy balances and energy accounts is contained in the Energy Statistics Compilers Manual (ESCM, draft to be finalized in 2014). The ESCM contains clear guidelines on data sources, on the use of administrative data, and on best practices applicable to a wider range of countries. Its primary purpose is to assist countries in strengthening official energy statistics by providing guidance on concepts and definitions, classifications, data sources, data frequency, data compilation methods, institutional arrangements, data quality assurances, metadata, and dissemination policies.

14.7 Energy intensity or efficiency can be derived at the economy-wide level by relating national energy statistics with those for economic output. However, for certain policy questions, and particularly for analysis of energy efficiency, intensity or balances for production and/or consumption systems by industries or economic activities, aspects of the lifecycle assessment methodological approach may be required. The chief methodological guidance on LCA is the ISO standard 14040:2006, with other ISO standards also relevant for specific energy balance calculations.

⁵ <http://unstats.un.org/unsd/envaccounting/seeae/>

14.8 There is no single internationally accepted and adopted definition and measurement method of access to modern energy. The International Energy Agency's (IEA) *World Energy Outlook (WEO)*⁶ defines modern energy access as “a household having reliable and affordable access to clean cooking facilities, a first connection to electricity and then an increasing level of electricity consumption over time to reach the regional average”. It can be a challenge to determine how best to capture issues such as the quantity, quality, and adequacy of service, as well as complementary issues such as informality and affordability, modern and traditional bioenergy production and use.

Data availability, requirements, methodological challenges and limitations

14.9 The United Nations Statistics Division's (UNSD) Energy Statistics Database contains basic statistics for more than 200 countries/territories worldwide. Currently, the database provides time series for the period 1950-2010 and is updated annually.

14.10 The most recent four years in the database are disseminated through the *Energy Statistics Yearbook* and the *Energy Balances and Electricity Profiles*. Data from 1990 to 2009 are available on-line through the UNdata portal. The Energy Statistics Database provides statistics on production, trade, transformation and consumption (end-use) for solid, liquid, and gaseous fuels, electricity, and heat. The main source of information for the Energy Statistics Database is the UNSD Annual Questionnaire on Energy Statistics. Additional sources of information for the database include national, regional and international statistical publications and databases - including, but not limited to the International Energy Agency (IEA), the Statistical Office of the European Communities (Eurostat), the International Atomic Energy Agency (IAEA), and the United Nations Food and Agriculture Organization (FAO). UNSD prepares estimates where official data are incomplete or inconsistent.

14.11 The *Energy Statistics Yearbook* is an annual compilation of internationally comparable statistics summarizing world energy trends. Currently annual data for 215 countries and areas are presented on production, trade and consumption of energy for solid, liquid, and gaseous fuels, electricity, and heat. Per capita consumption series are also provided for all energy products. Special tables include statistics on renewables and wastes.

14.12 The *Energy Balances and Electricity Profiles* currently provide energy balances for 126 countries and electricity profiles for 180 countries. The energy balances are snapshots of the annual energy flows in each country showing production, trade, transformation and consumption of energy products. The electricity profiles provide detailed information for each country on the production, trade and consumption of electricity and other related data.

⁶ <http://www.worldenergyoutlook.org/>

Challenges in defining and measuring energy access

14.13 Because currently available global databases only support binary global tracking of energy access, the SE4ALL Global Tracking Framework, based on an exhaustive analysis of existing global household survey questionnaires, suggested the following binary measures:

- Electricity access, defined as availability of an electricity connection at home or the use of electricity as the primary source for lighting;
- Access to modern cooking solutions, defined as relying primarily on non-solid fuels for cooking.

14.14 The SE4ALL Global Tracking team was able to construct a global database that covers 212 countries for access to modern energy services. A variety of data sources—primarily household surveys (including national censuses) and in a few cases, utility data—contribute to the measurement of access. Two global databases have been compiled: the World Bank’s Global Electrification Database and World Health Organization’s Global Household Energy Database. Both databases encompass three data points for each country—around 1990, around 2000, around 2010. Given that surveys were carried out infrequently, statistical models have been developed to estimate missing data points. Data on household fuel and electricity consumption have also been used from the United Nations Statistics Division (UNSD) *Energy Balances and Electricity Profiles*⁷ and from the International Energy Agency (IEA) *Energy Balances of OECD Countries* and *Energy Balances of Non-OECD Countries*⁸.

14.15 While the binary approach provides a basis for immediate global tracking, there is a growing consensus that measurements of energy access should be able to reflect a continuum of improvement. A candidate multi-tier metric has been put forward for medium-term development under the SE4ALL initiative which addresses many of the limitations of the binary measures described above.

14.16 It should be noted that while much of the focus recently has been on households’ access to electricity and modern cooking solution, the availability of reliable and affordable energy for the different industries providing goods and services is just as important.

Challenges in defining and measuring energy efficiency

14.17 Energy efficiency is defined as the ratio between useful outputs and associated energy inputs. Increasing energy efficiency aims at reducing the amount of energy required to provide the same products and services. Decoupling of energy use and economic growth is seen as a necessity to ensure a sustainable development.

⁷ <http://unstats.un.org/unsd/energy/balance/>

⁸ http://www.oecd-ilibrary.org/energy/energy-balances-of-oecd-countries_19962835-en and http://www.oecd-ilibrary.org/energy/energy-balances-of-non-oecd-countries_19962843-en

14.18 Energy intensity is typically measured at the economy-wide level as energy used domestically per dollar of gross domestic product (GDP) and has traditionally been used as a proxy for energy efficiency. Economy wide energy intensity is affected not only by changes in the efficiency of underlying processes, but also by other factors such as changes in the volume and structure of GDP. Ideally the efficiency should be calculated on the basis of the actual useful output associated with energy inputs as recorded by official statistics. These concerns can be partially addressed by statistical decomposition methods that allow confounding effects to be stripped out. Energy intensity indicators by economic activity/industry (energy used per dollar of value added of an industry) provide a more nuanced picture of the energy efficiency situation. Further, energy embedded in imports consumed in a country should ideally also be included to avoid the false impression of increased energy efficiency as a result of an increased dependence on imports (or energy outsourcing). In general, the precise methodology will depend on the policy question that the indicator attempts to help answer. Such indicators can be derived from the SEEA-Energy accounts.

14.19 Significant international efforts are needed to improve the availability of energy balances and accounts across the main sectors of the economy to allow for more meaningful measures of energy efficiency.

Challenges in defining and measuring the share of renewables in the energy mix

14.20 While there is a broad consensus among international organizations and government agencies on what constitute renewable sources of energy, their legal and formal definitions vary slightly in the type of resources included and the sustainability considerations taken into account.

14.21 Most common indicators used are: the share of energy from renewable sources in total primary energy production; the share of energy from renewable sources in energy end use; and the share of electricity produced from renewable energy sources in electricity consumption in a country. Information by economic activity is still very scattered.

14.22 For the purposes of global tracking, data for the period 1990–2010 have been compiled from energy balances for 181 countries published by the International Energy Agency and the United Nations. Those data will be complemented by indicators on: (i) policy targets for energy from renewable sources and adoption of relevant policy measures; (ii) technology and infrastructures costs related to the production of energy from renewable sources and (iii) total investment in energy from renewable sources. The implementation of energy balances and accounts in countries would go a long way towards filling the data gaps that are needed to answer some of the more pertinent policy questions related to energy from renewable sources.

14.23 Looking ahead, significant international efforts are needed to improve data collection methodologies, bridge identified data gaps and implement the statistical standards agreed to

by the UN Statistical Commission. While there is internationally agreed methodology on how to compile energy statistics, balances and accounts, there is a need to develop internationally agreed-upon standards for sustainability for each of the main technologies, which can then be used to assess the degree to which deployment meets sustainability standards. This is particularly critical in the case of biomass, where traditional harvesting practices and unsustainable modern biofuel production can be associated with deforestation, and other negative impacts on environmental, economic and social aspects, including food security. Furthermore, non-renewable energy inputs used in the production of “renewable energy” products are generally not taken into account, an issue particularly relevant for bioenergy products.

Conclusions

14.24 The internationally agreed statistical frameworks for organizing and integrating energy-related data provide a strong foundation for measuring progress towards achieving the goals of universal access to energy and improvements in energy efficiency and in the share of energy from renewable sources. The compilation of data by countries on a continued, sustained basis consistent with IRES, SEEA-Energy and SEEA CF will facilitate monitoring and international comparability.

14.25 Although the internationally agreed recommendations for the compilation of national energy statistics have been established and are used in many countries, there are still large differences in the degree of application, coverage and quality of the data collected worldwide. In addition, indicators that require disaggregated data by geography, income, sector, industry and other categories are not always available. Ongoing concerted capacity development efforts should be scaled up to improve the statistical production process of countries that are not able to provide the required data.

Statistical note 15:

Means of implementation; Global partnership for achieving sustainable development¹

Main policy issues, potential goals and targets

15.1 Sustainability represents key challenges for setting in motion a transformative development agenda to relieve pressures on the world's natural environment and ecosystems, achieve more sustainable management and use of natural resources while promoting dynamic and inclusive economic and human development. The new challenges and opportunities of today's increasingly integrated world require collective action with shared responsibilities for all countries. The report of the High Level Panel of eminent persons envisions a new global partnership to address the social, economic and environmental dimensions of sustainable development and their interrelationships in an integrated manner.

15.2 The effective translation of the commitments of the international community into tangible sustainable development outcomes requires the creation of an enabling environment for the implementation of the set targets in particular in developing countries. This involves mobilization of and access to adequate means of implementation such as financial resources, technology development and transfer, capacity development, global trade, regional integration and South-South cooperation.

15.3 With regard to sustainable development partnerships, the scope of the post 2015 development agenda is expected to be broader than that of the Millennium Development Goals. MDG 8 focused on official development assistance, market access, debt sustainability, access to new technologies and essential medicines. Beyond the present framework, the new sustainable development agenda is expected to include both domestic and external, public and private sources of financing, development oriented trade, transfer of technology, building and reinforcing institutions among the means of implementation to change the focus from "donor-recipient" relations to galvanizing collective action at the multilateral level to achieve a stable global environment for development.

Statistical methodology and data

15.4 Several issues in the context of the means of implementation of sustainable development and global partnerships are covered in the statistical note for the issue brief on macro-policy questions. That note describes and includes references to macroeconomic statistics frameworks on national accounts, balance of payments, government finance,

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Eurostat and PARIS21.

monetary and financial statistics, international statistical recommendations on trade and trade in services, compiler guides on external debt statistics and foreign direct investment and related practices. Those statistical resources and instruments form the basis for producing coherent and consistent statistics to inform on real, fiscal, monetary and financial sector developments to facilitate economic analysis and policy formulation and the monitoring of sustainable development targets.

15.5 The statistical considerations on two additional issues, research and development; and remittances are provided in this note.

15.6 *Research and development:* Science and technology are major sources of innovation contributing to inclusive economic development and stable, equitable, sustained, as well as resource- and waste-efficient growth. Enhanced scientific and engineering capabilities, fostering research, product development, technology access, transfer and adaptation are crucial for enabling transformative development. An increase in the share of resources devoted to research and development and the diffusion of environmentally sound technologies are important for utilizing the potential of technological progress for sustainable development outcomes.

15.7 Research and development (R&D) is one of the five categories of intellectual property assets recognized in the 2008 SNA. Despite the practical difficulties in capturing transactions related to R&D, the underlying concepts for recording these in the accounts are laid out in technical manuals. The Frascati Manual² is the internationally recognized methodology for collecting and using R&D statistics and includes definitions of basic concepts, data collection guidelines, and classifications for compiling statistics. Methodological guidance is also provided in the Handbook on Deriving Capital Measures of Intellectual Property Products, (OECD, 2010)³. The Guide on the Impact of Globalization on National Accounts, Chapter 7 (UNECE, 2012)⁴ provides guidance on measurement issues related to international transactions in intellectual property products, including R&D. The Frascati manual is currently being reviewed for consistency with the OECD and UNECE guidance. Data compilation on R&D is promoted in countries through the implementation programme of the 2008 SNA.

15.8 *Remittances:* Cross-border remittances – household income from foreign economies arising mainly from the temporary or permanent movement of people⁵ to those economies - have grown rapidly in recent years. According to estimates, remittance flows to developing countries in 2012 reached USD 401 billion, reaching three times the size of ODA and more

² Frascati Manual, Proposed Standard Practice for Surveys on Research and Experimental Development, OECD, 2002, see: <http://browse.oecdbookshop.org/oecd/pdfs/free/9202081e.pdf>

³ <http://www.oecd.org/dataoecd/40/39/44312350.pdf>

⁴ <http://staging.unece.org/statshome/areas-of-work/statsarchiveact02e/statsarchive0202e/statsgroupswggnae/guide-on-the-impact-of-globalization-on-national-accounts-by-chapters.html>

⁵ The Statistical Note on Population Dynamics touches on aspects of human mobility and international migration that go beyond remittances.

than half of FDI.⁶ As they have increased in size, remittances also have increased in importance at both individual and national levels. For individual recipients, remittances are often a significant source of household income, providing support for consumption, education, or healthcare complementing public and private financing efforts to ensure improved human rights standards, including those to education and health. At the national level, for net sending countries, the majority of which are more developed, remittances represent resource transfers to developing nations. Remittances can complement other resource flows such as government aid and private investment.

15.9 The underlying methodology and guidance for producing statistics on remittances are provided in the Balance of Payments Manual, BOP6 (IMF, 2010)⁷ and in the International Transactions in Remittances: Guide for Compilers and Users, (IMF 2009)⁸. Related concepts and methods on migration are discussed in the Recommendations on Statistics on International Migration, (United Nations, 1998). The Migration and Remittances Factbook, 2011, (World Bank 2011)⁹ is the most comprehensive collection of available data on remittances. The Guide on the Impact of Globalization on National Accounts, Chapter 11 (UNECE, 2012)¹⁰ deals with practices in the statistical treatment of remittances. In Europe, data collection is supported by the Compilation Guide for Collecting Remittance Statistics for EU Member States.¹¹

15.10 Although remittances are increasingly important to many economies, accurate measurement of remittances remains difficult. There tend to be large discrepancies between measurements of the amounts sent and received. Remittances data are difficult to collect using traditional methods capturing data via banks and other financial institutions or via household surveys therefore, some countries have chosen to estimate remittances using statistical modelling techniques. Given the attention to remittance prices reflected by the G20 commitment to reducing global average remittance cost by 5 per cent, enhanced statistical methodology is needed to collect data for monitoring and comparison of remittance costs and allow for measuring indicators using data sources of the World Bank and national remittance price databases.

Partnerships in statistics

15.11 The need to build and strengthen national statistical capacity, particularly in countries with the least developed statistical systems, is widely recognized in order to produce reliable and timely statistics and indicators for national policymakers and for other users at the national and international levels. The capacity development activities of existing partnerships

⁶ Migration and Development Brief No.20, World Bank, 2013

⁷ IMF's Balance of Payments and International Investment Position Manual, 6th Edition

⁸ <http://www.imf.org/external/np/sta/bop/2008/rcg/pdf/guide.pdf>

⁹ <https://openknowledge.worldbank.org/bitstream/handle/10986/2522/578690PUB0Migr11public10BOX353782B0.pdf?sequence=1>

¹⁰ <http://staging.unece.org/statshome/areas-of-work/statsarchive02e/statsarchive0202e/statsgroupswgnae/guide-on-the-impact-of-globalization-on-national-accounts-by-chapters.html>

¹¹ http://ec.europa.eu/europeaid/what/migration-asylum/documents/eu_remittances_for_developing_countries_final_19-11-2012.pdf

involving many national, regional and international partners have gradually become more strategic and results-oriented and are conducted in consultation with the countries to identify their emerging training needs.

15.12 Various forms of partnerships exist in statistics to support national efforts in building and strengthening statistical capacity. The global statistical community, led by the Statistical Commission has the responsibility of supporting Member States in building statistical capacity for providing evidence-based inputs to formulating national policies and actions on sustainable development. The Committee for the Coordination of Statistical Activities, comprising international and supranational statistical organizations has its main focus on coordinating the efficient functioning of the statistical system for producing and disseminating high-quality statistics, fostering development and use of common standards and methodologies, promoting inter-institutional support to share experiences and best practices and coordinating statistical capacity building efforts of its members through the coordination of technical cooperation programmes and training initiatives. United Nations Regional Commissions work in close cooperation and partnerships with their members and other international statistical institutions to elevate statistical capacity in their regions. Existing partnerships in statistics also include various technical working groups and task forces (e.g. Intersecretariat Working Group on National Accounts, Inter-Agency Task Force in Finance Statistics, United Nations Committee of Experts in Environmental-Economic Accounts etc.) actively engaged in developing and revising methodologies and supporting their implementation in Member States.

15.13 The Partnership in Statistics for Development in the 21st Century (PARIS 21), established in 1999, aims to promote the better use and production of statistics throughout the developing world. PARIS21, which also serves as the Busan Action Plan for Statistics (BAPS) Secretariat, is well-positioned to contribute to the global partnership on development data. With a 94% uptake in developing countries, the National Strategy for the Development of Statistics (NSDS) approach developed by PARIS21 can arguably be considered a best practice for medium- to long-term planning and co-ordination of national statistical production. PARIS21 has also facilitated user-producer dialogues at regional and national level to determine statistical priorities in consultation with policy makers, civil society, business and citizens. Lastly, PARIS21 monitors financial commitments to statistical development through its Partner Report on Support to Statistics (PRESS). This financial monitoring tool also offers insights into some of the challenges of delivering that financial support according to recipients' nationally agreed priorities.

15.14 In addition to existing partnerships in statistics, improved coordination of the statistical work of in the context of the post 2015 development agenda will be supported by a Memorandum of Understanding between the Multilateral Development Banks and the United Nations for which arrangements are in progress.

15.15 Moreover, the report of the High Level Panel of Eminent Persons on the Post-2015 Development Agenda,¹² published in May 2013, recommended establishing a Global Partnership on Development Data, the specific details and modalities of which are being discussed. The proposal puts forward bringing together a diversity of stakeholders (from national statistical organizations, international organizations, civil society, private and public sector, media and foundations) to develop a strategy to fill critical gaps, expand data accessibility and stimulate international efforts to ensure stronger monitoring of the processes of sustainable development. Being a partnership on data, United Nations Statistics Division holding the Secretariat for both the Statistical Commission and the Committee for the Coordination of Statistical Activities is well placed to take an active role in developing and coordinating the strategy for development data, including monitoring of progress, in close consultation with the envisaged partners. An integrated monitoring framework to follow the progress on commitments made will also be essential to strengthen the renewed global partnership.

¹² http://www.un.org/sg/management/pdf/HLP_P2015_Report.pdf

Statistical note 16:

Science, Technology and Innovation, Knowledge-sharing and Capacity-building¹

Main policy issues, potential goals and targets (aligned with issue brief)

16.1 The pivotal importance of Science, Technology and Innovation (STI), Knowledge-sharing and Capacity building for eradicating poverty and achieving sustainable development has recently been confirmed at the Rio+20 Conference and the 2013 ECOSOC Annual Ministerial Review. While research and innovation become increasingly open, collaborative and international, access to the benefits of STI and knowledge is unequally distributed within and among countries and people, and the technological gap between developing and developed countries is persistent. Access to new technologies, in particular information and communication technologies (ICTs) is recognized as a priority for the post-2015 agenda. Building an inclusive information society and providing affordable access to knowledge and information for all has been a goal called for at a number of recent high-level events.

16.2 The benefit of a stand-alone Sustainable Development Goal (SDG) on ‘Harnessing STI for Sustainable Development’ is that it would enhance the adoption and operationalization of integrated national STI strategies and action plans for sustainable development and would increase innovation capacities, green technology transfer and scientific capacity-building in developing countries.

16.3 The following potential targets are identified in the issues brief:

- Investment in science, technology and innovation, including investment in R&D, as a percentage of GDP and as a percentage of Official Development Assistance;
- STI policies as holistic frameworks and integral part of national sustainable development policies addressing inter alia the following:
 - Increased multi-stakeholder collaboration across the policy-science-industry-society spectrum;
 - Human, institutional and societal STI capacity-building, with a strong focus on training and science education at all levels;
 - Measurement of innovation capacity across a range of metrics which combine to create national innovation eco-systems;
 - Achieving gender parity in STI systems;
- Level of openness achieved in accessing, sharing, processing and using scientific research and knowledge;
- Inclusive Internet connectivity and use; scaling up of ICTs to spur local innovation;

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, United Kingdom, United States of America, ITU, OECD, UNESCO (UIS), WIPO.

- Data revolution including solid STI statistics and indicators systems, and adequate capacities for data collection and analysis;
- Regional and international STI cooperation and multi-stakeholder partnerships, in particular South-South and North-South-South;
- New and stronger financing mechanisms at all levels for STI, knowledge and data-sharing, capacity development and green technology transfer;
- Achieving specific resource efficiency/decoupling factors via STI.

Conceptual and methodological tools (references)

16.4 *Measuring Research and Development (R&D)*: The Frascati Manual², developed by the OECD, has become the global standard for collecting R&D statistics. The UNESCO Institute for Statistics (UIS) recently contributed a supporting document³ to help developing countries apply the Frascati Manual to their particular context. The Frascati Manual is currently being revised by the OECD, taking into account its use as the global reference manual.

16.5 The System of National Accounts 2008 (2008 SNA) recognises the expenditure on R&D as capital formation. Guidance for R&D in the 2008 SNA as intellectual property product is provided by the OECD Handbook on Deriving Capital Measures of Intellectual Property Products⁴ using the Frascati based surveys as source data.

16.6 *Measuring Innovation*: The ability to determine the scale of innovation activities, the characteristics of innovation firms and the internal and systemic factors that can influence innovation is a prerequisite for the pursuit and analysis of policies aimed at fostering innovation. The OECD/Eurostat *Oslo Manual*⁵ is the foremost international source of guidelines for the collection and use of data on innovation activities in industry. Also, the Global Innovation Index (GII) co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO) has evolved to an important benchmarking tool to measure innovation in a more holistic fashion.⁶ The OECD is currently carrying out an examination of innovation survey concepts and questions to better understand how companies think about, manage, and account for activities related to innovation.

16.7 *Measuring the information society*: The *OECD Guide to Measuring the Information Society*⁷ provides the statistical definitions, classifications and methods to measure and compare the information society across countries.

² See Frascati Manual: <http://www.oecd.org/sti/frascaticmanual>

³ See Measuring R&D in Developing Countries: Annex to the Frascati Manual: <http://www.oecd.org/sti/inno/49793555.pdf>

⁴ See OECD Handbook on Deriving Capital Measures of Intellectual Property Products <http://www.oecd.org/std/44312350.pdf>

⁵ See Oslo Manual: www.oecd.org/sti/oslomanual

⁶ See WIPO, INSEAD and Cornell University (2013), Global Innovation Index - The Local Dynamics of Innovation, Geneva. World Intellectual Property Organization at www.globalinnovationindex.org.

⁷ See <http://www.oecd.org/sti/sci-tech/oecdguidetomeasuringtheinformationsociety2011.htm>

16.8 The publication *Measuring the WSIS Targets: a statistical framework, 2011*⁸, by the *Partnership on Measuring ICT for Development* is a response to the call at the 2011 World Summit on Information Society to develop indicators and produce official statistics for measuring the information society. It provides a concrete list of indicators to monitor the 10 WSIS targets, which range from connecting villages, schools, and health centres to developing online content and providing people with ICT access, and is a practical tool for policy makers and data producers in developing countries to monitor and assess information society developments.

16.9 The *ITU Handbook for the Collection of Administrative Data on Telecommunications/ICT*⁹ (2011) is a key reference document for the collection of internationally comparable indicators on telecommunications/ICT based on administrative sources (i.e. supply-side data mainly from operators). The Handbook includes definitions and methodological clarifications for 81 internationally agreed indicators and corresponding sub-indicators.

16.10 The *ITU Manual for Measuring ICT Access and Use by Households and Individuals*¹⁰ has been prepared to support countries in their efforts to measure and monitor the developments towards becoming information societies. It aims at improving the availability and comparability of statistics on access to, and use of ICTs by households and individuals.

16.11 The *UNCTAD Manual for the Production of Statistics on the Information Economy (2009)*¹¹ serves as a reference for national statistical offices and other producers of official statistics on business use of ICT. The Manual provides a guide to data collection and analysis, international standards, and definitions.

16.12 The *Partnership on Measuring ICT for Development (2010) Core ICT Indicators* has served as the basis for the collection of internationally comparable ICT statistics worldwide. A revised and extended core list of ICT indicators¹², which includes 7 new indicators on measuring e-government, was endorsed by the UN Statistical Commission in March 2012, at its forty-third session. These indicators are clearly defined and associated with statistical standards, which allows comparability across countries. They cover the areas of ICT infrastructure and access; access to, and use of, ICT by households and individuals; use of ICT by businesses; the ICT sector; trade in ICT goods; ICT in education; and e-government.

16.13 *Measuring Patents*: Patent data are an additional resource for the study of technical change. Alongside other science and technology indicators such as R&D expenditure and personnel or innovation-survey data, patent data provide a uniquely detailed source of information on inventive activity and the multiple dimensions of the inventive process (e.g.

⁸ See <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/wsistargets2011.aspx>

⁹ See <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx>

¹⁰ See <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2009.aspx>

¹¹ http://new.unctad.org/templates/Page_885.aspx

¹² See Annex of <http://unstats.un.org/unsd/statcom/doc12/2012-12-ICT-E.pdf>

geographical location, technical and institutional origin, individuals and networks). The 2009 edition of the *OECD Patent Statistics Manual*¹³ takes stock of the recent developments in the field. The World Intellectual Property Organization publishes the *World Intellectual Property Indicators Report* on a yearly basis, and the *World Intellectual Property Report* on a bi-annual basis¹⁴.

Existing and new indicators

16.14 In the current MDG framework, the following target and three indicators are being tracked under Goal 8 (Global Partnership for Development):

<p>Target 8.F: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications</p>	<p>8.14 Fixed telephone lines per 100 inhabitants 8.15 Mobile cellular subscriptions per 100 inhabitants 8.16 Internet users per 100 inhabitants</p>
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16.15 ITU maintains a large number of indicators in its World Telecommunication/ICT Indicators database¹⁵. The ICT sector is very dynamic and technological and market developments in telecommunication and ICT services have undergone a major transformation over the last few years. These rapid changes, as well as the strong growth in ICT access and use, make a review of the existing indicators necessary. In particular, the importance of the fixed-telephone network has decreased, and there is a growing trend toward broadband, including mobile-broadband infrastructure and services. In addition, over the last years, an increasing number of countries have expanded the number and type of indicators that can help monitor ICT access and use. A revised list of indicators to track post 2015 developments worldwide would have to take these changes into account.

16.16 In the current MDG framework, there is no goal or indicator for science. There is a need though to recognise science in its own right as an important tool for development.

Data requirements, challenges and limitations

16.17 OECD maintains databases with a large number of indicators on R&D¹⁶, science and technology¹⁷, innovation¹⁸, patents¹⁹ and bio-technology²⁰, but these indicators are almost only collected for the OECD Member States.

¹³ See Patent Statistics Manual: <http://www.oecd.org/sti/inno/oecdpatentstatisticsmanual.htm>

¹⁴ http://www.wipo.int/econ_stat/en/economics/wipr/ and <http://www.wipo.int/ipstats/en/>.

¹⁵ See http://www.itu.int/en/ITU-D/Statistics/Documents/publications/wtid/WTID_indicators.pdf

¹⁶ See <http://www.oecd.org/sti/rds>

¹⁷ See <http://www.oecd.org/sti/msti.htm>

¹⁸ See <http://www.oecd.org/sti/inno/inno-stats.htm>

¹⁹ See <http://www.oecd.org/sti/ipr-statistics>

16.18 UIS maintains a global database²¹, which contains data for R&D expenditure as a % of GDP for about 130 out of 215 countries and territories. For the number of researchers, there are data for about 140 countries when measured in head count and for 115 countries when measured in FTEs. For about 130 countries, a gender breakdown is available. Comparability of the data within the group of OECD and Eurostat countries is very good, whereas for the other countries it varies. Capacity building will be crucial to raise the quality and quantity of data for developing countries.

16.19 There are almost 100 countries that have carried out at least one innovation survey in the business sector of their country according to the OECD/Eurostat Oslo Manual. Innovation statistics are collected by countries, which submit the data to various regional and international organisations, including the OECD, Eurostat, AU/NEPAD and the UNESCO Institute for Statistics (UIS), which is attempting to develop an international database. The international comparability of innovation data is rather limited, particularly outside Europe, and significantly lower than for the R&D data. Capacity building will be even more important than for R&D data to raise the quality and quantity of data for developing countries.

16.20 Data to track the three proposed ICT targets are based on both administrative records and national household surveys. Data based on administrative records are widely available (for more than 150 countries). Data for the indicators on ICT prices (Target 1) are collected annually, through a questionnaire that is sent to official government agencies in charge of ICT statistics. For those countries that do not reply, data are collected directly from operators' websites. Data to track ICT use (Target 3) are based on household survey data and while the data gaps are more important than for the other indicators, data availability is increasing on a continuous basis.

16.21 ITU's World Telecommunication/ICT Indicators database on CD-ROM and online contains time series data for the years 1960, 1965, 1970 and annually from 1975 to 2012 for more than 150 telecommunication/ICT statistics covering fixed telephone network, mobile-cellular telephone subscriptions, quality of service, Internet (including fixed- and mobile-broadband subscription data), traffic, staff, prices, revenue, investment and statistics on ICT access and use by households and individuals. Selected demographic, macroeconomic and broadcasting statistics are also included. Data for over 200 economies are available. Notes explaining data exceptions are also included.

16.22 The 5th edition of the ITU *Measuring the Information Society*²² report was launched on 7 October 2013. It features key ICT data and benchmarking tools to measure the information society, including the ICT Development Index (IDI). The IDI captures the level

²⁰ See <http://www.oecd.org/innovation/inno/keybiotechnologyindicators.htm>

²¹ See <http://www.uis.unesco.org/DataCentre/Pages/BrowseScience.aspx>

²² See <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2013.aspx>

of ICT developments in 157 economies worldwide and compares progress made during the last year. The report also presents the first comprehensive mobile-broadband price data set for almost 130 economies. It features a new model and data to measure the world's digital native population - those young people who were born into the digital age - and a quantitative overview of digital TV broadcasting trends.

16.23 WIPO maintains the database behind the Global Innovation Index for 142 countries. In addition, WIPO maintains the WIPO Statistics database which includes country profiles and intellectual property indicators for the majority of UN Member States.

Conclusions

16.24 If there will be an overarching explicit STI goal proposed for the post-2015 development agenda, this will require a widely expanded data foundation upon which to monitor progress. It is important to build on existing international standards, such as the Frascati and Oslo Manuals and WIPO's measurement approaches with respect to intellectual property. Whereas a multitude of data and indicators exist for the developed countries, there are still many gaps in the availability of data for developing countries. Further support for statistical capacity building will be needed to meet this demand.

16.25 The picture for availability of indicators on ICT is brighter. Major changes have taken place in terms of ICT since 2000. The access to and use of ICT have grown substantially and ICTs have been recognized as an important development enabler. At the same time, internationally comparable data to track the information society has greatly improved and more data are available to track ICT use, its affordability and also its quality. The Partnership on Measuring ICT for Development and the Broadband Commission for Development have identified a number of ICT targets and indicators to monitor the information society and they have improved the availability of comparable ICT indicators.

16.26 Challenges faced by the statistical community in measuring STI are the fast changing nature of this sector, implying fast changing requirements for data collection. Another challenge is the need for statistical organisations to be doing more analytical and modelling work, especially in the area of STI and related Big Data, which means that staff needs to acquire the necessary analytical skills.

Statistical note 17:

Needs of Countries in Special Situations - African Countries, Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, as well as the Specific Challenges Facing Middle-Income Countries¹

Main policy issues, potential goals and targets

17.1 African countries, Least Developed Countries (LDCs), Landlocked Developing Countries (LLDCs), Small Islands Developing States (SIDS) and the Middle-Income Countries (MICs) are groups of countries which have made significant progress towards the achievement of the MDG goals. However, these countries are still facing unresolved challenges and emerging issues which need to be reflected in the new development agenda. Some of these challenges and issues are common to all of these country groups; some others are group specific due to the very unique situations faced by the groups.

17.2 *African countries:* Overall, African stakeholders have called for an agenda that reflects the priorities of the African Union's New Partnership for Africa's Development (NEPAD) under four broad development outcomes: 1) structural economic transformation and inclusive growth; 2) innovation and technology transfer; 3) human development; and 4) financing and partnerships. In general, the availability of data in Africa is still somehow limited due to the lack of resources, among others.²

17.3 *LDCs:* For this group of countries, it will be important to continue focusing on the implementation of the Istanbul Programme of Action (IPoA) for LDCs for the Decade 2011-20 and incorporate the Rio Principles. The following issues have been identified as priorities: structural transformation through productive capacity building; agriculture, food security and rural development; trade; commodities; human and social development; multiple crises and other emerging challenges; environmental degradation and climate change; mobilizing financial resources for development and capacity-building; good governance at all levels; national leadership and ownership; and, monitoring and data.

17.4 *LLDCs:* Some of the areas identified as critical for this group of countries are the following: social development; transport and transit infrastructure; enhancing trade, trade competitiveness and trade facilitation; structural transformation enhanced productive

¹ The following country contributed to the review of this statistical note: United States of America.

² <http://unstats.un.org/unsd/statcom/doc13/2013-14-ECA-E.pdf>

capacities and building resilience to shocks; regional integration; private sector development; climate change, desertification and land degradation; and means of implementation.

17.5 *SIDS*: The following areas have been identified as critical for this group of countries: sustainable energy; oceans; non-communicable diseases; climate change and sea level rise; building resilience; and means of implementation.

17.6 *MICs*: In the context of the post-2015 development agenda, the following are issues where the focus of this group of countries could be: support to reduce inequalities and address social imbalances; support equitable growth and poverty reduction; set up e-Governments, support infrastructure development, and foster multi-sectorial approaches to development; support in bridging the technology gap to increase effectiveness and positive results on monitoring and evaluation; and contributions to production of global public goods, including those related to security and climate change.

Conceptual frameworks, existing and new indicators

17.7 This section summarizes existing and possible new indicators that could be used to measure some of the development issues prioritized by country groups, as well as statistical frameworks which could facilitate research and policy formulation. Among the issues or areas discussed below are: economy and growth, inequality, decent work, innovation and technology, trade, food security, environment, disasters, non-communicable diseases, and governance, peace and security. Readers of this note are also encouraged to consult with the statistical notes which are produced separately to accompany the issue brief of relevant topics.

17.8 *Economy and growth*: Achieving an enabling macroeconomic policy framework to promote equitable and sustainable development need to begin with a clear understanding of the underlying factors that drive economic growth. The System of National Accounts (SNA), the internationally accepted standard for macroeconomic statistics, provides an overarching framework for macroeconomic statistics, including trade, inequality, employment, technology and natural resource.

17.9 UN Statistics Division maintains two National Accounts databases: the National Accounts Main Aggregates (AMA) Database³ and the Main Aggregates and Detailed Tables (MADT) data base⁴. The AMA contains a series of analytical national accounts tables from 1970 onwards for more than 200 countries and areas of the world. The MADT contains official national accounts data provided by countries. IMF World Economic Outlook (WEO) database contains selected macroeconomic data series, such as national accounts, inflation and balance of payments among others. Data are available from 1980 to the present, and

³ <http://unstats.un.org/unsd/snaama/Introduction.asp>

⁴ <http://unstats.un.org/unsd/nationalaccount/madt.asp>

selected indicators present mid-term projections. World Bank publishes in the World Development Indicators (WDI) these macroeconomic indicators.

17.10 Inequality: Inequality is an intrinsic issue commonly addressed by some country groups, in the context of social development, structural economic transformation or inclusive growth.

17.11 Different measures have been developed for the measurement of *income inequality*, such as the range, range ratio, Palma ratio, the coefficient of variation, Gini index and Theil's T statistic. For the calculation of some of them, comprehensive individual income or consumption data are required, and they are available only for those countries where Income and Expenditure Surveys are conducted. Surveys are very expensive and not conducted frequently, which pose major challenge to data production. The World Bank has maintained the poverty and inequality database which contains Gini index, income shares by quintile, poverty gap, poverty headcount ratio and absolute number of poor people at different international poverty lines for countries for which data is available. For some countries, it is possible to find rural and urban data.⁵

17.12 For the measurement of *non-income inequality*, the following measures such as the range, range ratio and the concentration index, could be used⁶. As above, for the calculation of some of them, comprehensive individual data are required. The challenge and the limitation is the availability of the information, because in many countries surveys from which the data can be obtained are conducted only once in a while.

17.13 In general, in order to monitor the reduction of inequalities, disaggregated data at very different levels and groups are necessary. Surveys not only have the periodicity issue but they cannot be representative at very low levels of disaggregation or of certain population groups, unless they are designed accordingly.

17.14 Decent Work: The concept of decent work addresses four strategic dimensions of development, namely, full and productive employment, rights at work, social protection and the promotion of social dialogue, some of which are relevant to priority agenda to the country groups in special situations.

17.15 The ILO manual, "Decent Work Indicators, Concepts and Definitions" published in May 2012, presents statistical indicators and legal framework indicators based on the ILO Framework on the Measurement of Decent Work. It should be noted that, however, the 19th International Conference of Labour Statisticians adopted in October 2013 revised standards of labour force and work statistics. Hence, there may be some changes in the calculation of indicators on decent work.

⁵ <http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=poverty-and-inequality-database>

⁶ <http://siteresources.worldbank.org/INTPAH/Resources/Publications/459843-1195594469249/HealthEquityCh7.pdf> and <http://siteresources.worldbank.org/INTPAH/Resources/Publications/459843-1195594469249/HealthEquityCh8.pdf>

17.16 Some of the indicators on decent work can be obtained from household-based labour force surveys (LFS) which generally allows disaggregation of data. Nonetheless, household surveys other than labour force surveys may have limitations with regard to periodicity, geographic, coverage or work coverage.⁷

17.17 *Innovation/Technology:* The measurement of innovation is still underdeveloped. UIS of UNESCO is working with developing countries to derive indicators and instruments to appropriately measure and monitor innovation using the Oslo Manual developed by OECD and Eurostat. A revised version of the manual explains the measurement of the different dimensions of innovation.⁸

17.18 The Partnership on Measuring ICT for Development introduced in 2005 a list of core ICT indicators which was updated in 2010 by providing definitions, model questions and other statistical standards relating to the core list of ICT indicators. The indicators cover infrastructure and access as well as the use of ICT by different sectors.

17.19 UNCTAD collects data on the ICT core indicators on the information economy and others through a questionnaire which is sent to the National Statistical Offices (NSOs) worldwide. ITU collects data for 200 economies and over 100 indicators which can be classified into two sets: 1) Telecommunication/ICT data collected from national telecommunication/ICT ministries and regulatory authorities and prices of ICT services; and 2) household ICT data collected from NSOs.

17.20 *Trade:* In terms of the monitoring of trade and commodities, data collected from UNSD in the COMTRADE database (Commodity Trade Statistics Database) are widely used. This database contains countries' international trade statistics data detailed by commodities and partner countries. The data covers since 1962 up to the most recent completed year.⁹

17.21 The merchandise export concentration could be an indicator to measure sectorial concentration of a country's exports. UNCTAD regularly reports this indicator in its dissemination system.¹⁰ WTO (World Trade Organization) makes available international trade and tariff data.¹¹

17.22 *Food security:* FAO has compiled food security indicators, which is aligned with the recommendations made in September 2011 by the Committee on World Food Security (CFS) Round Table on Hunger Measurement. Indicators are classified along the four dimensions of

⁷ http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_183859.pdf

⁸ <http://www.uis.unesco.org/ScienceTechnology/Pages/default.aspx>

⁹ <http://unstats.un.org/unsd/tradekb/Knowledgebase/What-is-UN-Comtrade>

¹⁰ http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?CS_referer=&sCS_ChosenLang=en

¹¹ http://www.wto.org/english/res_e/statis_e/looking4_e.htm#summary

food security: availability, access, utilization and stability.¹² FAO maintains the database which comprises the data for over 150 countries and territories¹³.

17.23 In 2010, FAO together with the WB and UN published the Global Strategy to Improve Agricultural and Rural Statistics in which a minimum set of internationally comparable core data that countries should provide is defined.¹⁴ According to the Strategy, the availability and quality of these statistics have declined due to the low response rates to the FAO questionnaire by countries. Countries are also challenged by the lack of capacity and financial resources to produce these data, because agricultural and rural statistics are often not integrated in the national statistical system.

17.24 *Environment:* The System of Environmental-Economic Accounting (SEEA) Central Framework is an international statistical standard for environmental-economic accounts. It is a system for organizing data for the derivation of coherent indicators and descriptive statistics to monitor the interactions between the economy and environment and environmental sustainability. It contains the standard concepts, definitions, classifications, accounting rules and tables for producing internationally comparable statistics, following a similar accounting structure as the System of National Accounts (SNA)¹⁵.

17.25 Revised in 2013, the Framework for the Development of Environment Statistics (FDES) includes the core set of environment statistics.¹⁶ The FDES focuses on the development of basic environment statistics consistently, where applicable, with the concepts, definitions and classifications provided in the SEEA. The SEEA Experimental Ecosystem Accounting is an important first step in the development of a statistical framework for ecosystem accounting, adding links to well-being and provides a conceptual framework to measure ecosystem in a holistic manner. Among other things, the SEEA Experimental Ecosystem Accounting provides the framework for biodiversity and carbon accounting as well as land degradation.

17.26 The Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC) compiles the data on national greenhouse gas (GHG) emissions and removals, reported by countries that are Parties to the Convention.¹⁷

17.27 The Environmental Vulnerability Index (EVI) was developed by the South Pacific Applied Geoscience Commission (SOPAC), the United Nations Environment Programme (UNEP) and their partners. The EVI uses 50 ‘smart indicators’ to capture the key elements of environmental vulnerability.¹⁸

¹² <http://www.fao.org/economic/ess/ess-fs/en/> and <http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/>

¹³ <http://www.fao.org/economic/ess/ess-fs/ess-fadata/en/#.UoPOz3C-ou8>

¹⁴ http://www.fao.org/fileadmin/templates/ess/documents/meetings_and_workshops/ICAS5/Ag_Statistics_Strategy_Final.pdf

¹⁵ <http://unstats.un.org/unsd/envaccounting/seea.asp>

¹⁶ http://unstats.un.org/unsd/ENVIRONMENT/FDES/FDES%20Flyer%20English_3July2013_WEB.pdf

¹⁷ http://unfccc.int/ghg_data/items/3800.php

¹⁸ <http://www.vulnerabilityindex.net/index.html>

17.28 The Ocean Biogeographic Information System (OBIS), created by the Census of Marine Life, is now part of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, under its International Oceanographic Data and Information Exchange (IODE) programme. OBIS is a data repository of marine species datasets which cover all the world's oceans.¹⁹

17.29 *Disasters*: The post-2015 framework for disaster risk reduction (Hyogo Framework for Action 2, HFA2) process is an on-going consultative process. During the World Conference on Disaster Risk planned in Japan in 2015, the new framework will be agreed and put forward to the UNGA for endorsement.²⁰

17.30 EM-DAT maintains an international disaster database of technological and natural disasters. Disasters in the database have to fulfill at least one of the following: a) with at least ten or more people reported killed; b) hundred or more people reported affected; c) declaration of a state of emergency; and/or d) call for international assistance.²¹

17.31 *Non-communicable diseases (NCDs)*: WHO released the global action plan for the prevention and control of NCDs 2013-2020 based on the implementation of the 2008-2013 action plan. New action plan includes a comprehensive global monitoring framework consisting of 25 indicators and a set of nine voluntary targets for the prevention and control of NCDs.²² WHO disseminates data on NCDs through the Global Health Observatory Data Repository on three areas: mortality, risk factors, and health system response and capacity.²³
²⁴

17.32 *Governance, peace and security*: The World Bank under the Worldwide Governance Indicators (WGI) project reports governance indicators on six dimensions: voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. The database contains data for all the countries in the world for the period 1996-2012.²⁵

17.33 As part of the strategy for the harmonization of statistics in Africa, the African Union Commission, in collaboration with other international organizations is developing an action plan, a minimal list of indicators and a harmonized questionnaire to improve the production of governance, peace and security statistics in Africa.²⁶

¹⁹ <http://www.iobis.org/home>

²⁰ <http://www.preventionweb.net/posthfa/about>

²¹ <http://www.emdat.be/>

²² http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf

²³ <http://apps.who.int/gho/data/node.main.A858?lang=en>

²⁴ Other databases also maintained by WHO on related topics can be seen at <http://www.who.int/nmh/databases/en/>.

²⁵ <http://info.worldbank.org/governance/wgi/index.aspx#home>

²⁶ <http://unstats.un.org/unsd/statcom/doc13/2013-14-ECA-E.pdf>

17.34 The Global Peace Index (GPI) is calculated annually by the Institute for Economics and Peace (IEP) and measures the state of peace through a composite index comprising information from 22 quantitative and qualitative indicators which are classified in three broad areas: ongoing domestic and international conflict, societal safety and security and militarization.

Conclusions

17.35 Despite big strides that the groups of countries in special situation have made in achieving MDGs, they still face many challenging development issues. Many of pressing issues are common among the country groups, while some are unique to a group due to specific situations that it faces. For many identified areas, agreed statistical frameworks and indicators have been developed, and some data have been collected by relevant international organizations. At the same time, there still exist some priority areas for which a conceptual framework has evolved, or statistical measurement requires further refinement or standardization, which in turn may requires significant investment in developing statistical systems and capacity building of countries.

Annex: Relevant issues addressed by the group of countries in special situation

Relevant issues	African countries	LDCs	LLDCs	SIDS	MICs
Human development					
Social development					Support to reduce inequalities and address social imbalances
Innovation and technology transfer					Support in bridging the technology gap to increase effectiveness and positive results on monitoring and evaluation
Structural economic transformation and inclusive growth		Structural transformation through productive capacity building	Structural transformation enhanced productive capacities and building resilience to shocks		Support equitable growth and poverty reduction
Financing and partnerships		Mobilizing financial resources for development and capacity-building	Means of implementation	Means of implementation	
Agriculture, food security and rural development					
Trade			Enhancing trade, trade competitiveness and trade facilitation		
Commodities					
Multiple crises and other emerging challenges					
Environmental degradation and climate change			Climate change, desertification and land degradation	Climate change and sea level rise	
Good governance at all levels					
National leadership and ownership					
Monitoring and data					Support in bridging the technology gap to increase effectiveness and positive results on monitoring and evaluation
Transport and transit infrastructure					
Regional integration					
Private sector development					
Sustainable energy					
Oceans					
Non-communicable diseases					
Building resilience					
Set up e-Governments, support infrastructure development, and foster multi-sectorial approaches to development					
Contributions to production of global public goods, including those related to security and climate change					

Statistical note 18:

Human Rights, including the Right to Development¹

Main policy issues, potential goals and targets

18.1 “Whatever form the post-2015 governance architecture may take, appropriate measurement of [...] human rights commitments is both feasible and desirable, at global, national and local levels.”²

18.2 Over the past fifty years, member states have agreed on human rights standards in relation to all dimensions of development, including freedom from want (e.g. the rights to health, education or water), freedom from fear (e.g. human rights related to access to justice, public participation or personal integrity), as well as principles of equality, international cooperation and accountability for progress³.

18.3 Most proposals for post-2015 development goals therefore **call not for a stand-alone goal** on human rights but suggest that **human rights be integrated throughout the post-2015 framework**, with “a human rights approach underpinning each ‘sectorial’ goal”, targets, indicators as well as means of implementation and accountability arrangements.⁴ In other words, civil society, member states and technical experts alike are suggesting that human rights provide guidance for the content of all potential goals as well as the implementation and accountability arrangements of the new development framework.

Conceptual and methodological tools

18.4 Since human rights relate to all dimensions of development, it becomes important to clarify the **notion of ‘human rights indicators’**. A human rights indicator can be understood as “specific information on the state or condition of an object, event, activity or outcome that can be related to human rights norms and standards; that addresses and reflects human rights

¹ The following countries and agencies contributed to the drafting and review of this note: Australia, Cameroon, United Kingdom, OHCHR, UNDESA, UNDP, UNEP, UNICEF, UN-Women. The agency contributors see this note as a preliminary discussion of opportunities and challenges which will require further work over the coming months.

² UNDP and OHCHR, June 2013, Global Thematic Consultation on Governance – Consultation Report

³ Human rights and the right to development are normatively and legally grounded in the Universal Declaration of Human Rights as well as international and regional human rights treaties and other agreements to which member states have voluntarily become party. A normative **definition of development** is provided in the preamble of the Declaration on the Right to Development which recognizes that “development is a comprehensive economic, social, cultural and political process, which aims at the constant improvement of the well-being of the entire population and of all individuals on the basis of their active, free and meaningful participation in development and in the fair distribution of benefits resulting therefrom”. At the international level, the implementation of human rights agreements is formally monitored by the international **human rights mechanisms**, including expert committees (treaty bodies) which review regular country reports and the special procedures of the Human Rights Council such as Special Rapporteurs and Independent Experts on specific topics or country situations, as well as the Universal Periodic Review, a peer review mechanism made up of member states.

⁴ UNDG, 2013, A Million Voices. Integrating human rights across the entire post-2015 agenda has also been recommended by the HLP, numerous member states in the OWG (see statements on 13 December 2013) and many other stakeholders. A stand-alone goal on human rights has been suggested by SDSN and the UN Global Compact.

principles and concerns; and that can be used to assess and monitor the promotion and implementation of human rights”⁵. Defined this way, some indicators can be unique to human rights because they owe their existence to specific human rights norms or standards, e.g. the reported number of victims of torture by the police⁶. In addition, there are a large number of indicators, such as socioeconomic statistics commonly used in the development context, that can meet (at least implicitly) all the above definitional requirements of a human rights indicator (e.g. existing development indicators on education will also be relevant human rights indicators for the right to education if they include key dimensions such as availability, accessibility and quality of education). The UN Task Team on the Post-2015 Development Agenda, in its report on statistics and indicators for the Post-2015 development agenda, recommended further inclusion of statistics and data on human rights “into the mainstream of accepted official country-level statistics”⁷. In the context of the Post-2015 Development Agenda, including the SDGs, a mix of both these categories of indicators should therefore be used. A conceptual and methodological framework for human rights indicators, which takes these considerations into account, has been developed by OHCHR in consultation with a panel of international experts, including official and NGO statisticians, and endorsed by UN human rights mechanisms⁸.

Existing and new indicators

What is there to build on?

18.5 Current MDG indicators relate to various human rights standards, especially to key economic and social rights (e.g. on health and education), **but the existing indicators do not fully and systematically reflect all dimensions of relevant human rights**. For example, indicator 2.1 (net enrolment ratio in primary education), relates to the right to education but does not reflect member states’ commitment to provide primary education free of charge (Art. 13(2)(a) ICESCR). Similarly, MDG indicator 7.10 (Proportion of urban population living in slums) relates to the right to housing but is formulated in a problematic way from a human rights perspective: It can encourage reducing slum populations through interventions such as evictions rather than focusing on provision of basic secure tenure which is the first element of the right to housing. An example of an indicator reflecting key civil and political rights⁹ is MDG indicator 3.3 - proportion of seats held by women in national parliament. However, other women’s rights and key aspects of gender equality such as eliminating violence against women and girls and the recognition of unpaid care work are not reflected sufficiently in the existing set of MDG indicators. This shows that even if human

⁵ OHCHR, 2013, Who Will Be Accountable? Human Rights and the Post-2015 Development Agenda,

(<http://www.ohchr.org/Documents/Publications/WhoWillBeAccountable.pdf>), OHCHR, 2012, Human Rights Indicators: A guide to measurement and implementation (<http://www.ohchr.org/EN/Issues/Indicators/Pages/HRIndicatorsIndex.aspx>)

⁶ It should be pointed out that such extreme human rights violations are very difficult to monitor accurately with many such violations potentially going unreported.

⁷ UN Task Team, 2013, Statistics and indicators for the post-2015 development agenda, p.37

⁸ OHCHR, 2012, Human Rights Indicators This publication includes illustrative indicators for some human rights.

⁹ Namely the right to participate in the conduct of public affairs (Art 25 ICCPR) and the right to equality between men and women and freedom from discrimination (Art 2 and 3 ICCPR)

rights may require reconsidering or adding certain indicators (see below), many of the existing MDG indicators can be built on by ensuring that they reflect systematically the content of agreed human rights standards and principles in the areas that the new development agenda will cover. With regard to human rights, there are no **international data sets** that cover all human rights comprehensively. Instead, and as mentioned above, it is necessary to draw on different types of indicators and data sources (see below under 4.). The relevance of the selected indicators to human rights should be clearly stated in the associated metadata.

Need for additional indicators

18.6 Human rights standards and the cross-cutting principles of participation, accountability, non-discrimination and equality need to guide both the *selection process* and the *content* of post-2015 targets and indicators.

18.7 Considerations for the selection process:

- While the MDGs focus on a small number of (mainly) outcome indicators, a human rights perspective calls for evidence of fiscal and policy **effort** (measured by structural and process indicators), as well as improved **outcomes**¹⁰ (measured by outcome indicators). For example, when measuring the realization of the right to health it would be critical to assess ratification of and reporting on key international human rights treaties and existence and coverage of relevant national policies such as on child health or sexual and reproductive health (structural indicators), the proportion of births attended by skilled health personnel (process indicator), and maternal mortality ratio (outcome indicator).
- In order to identify disparities, **all indicators should be disaggregated** by different social groups as far as possible, taking into account issues regarding sample sizes, at a minimum in relation to sex, age, disabilities, location (e.g. rural-urban/remote areas/slum locations) and income/wealth as well as by the most disadvantaged groups in each country (e.g. caste, indigenous peoples, migrants), decided through a consultative and participatory national process and in accordance with related human rights, ethical and statistical standards. Preferably, indicators should be disaggregated by all grounds of prohibited discrimination as outlined in key human rights treaties.
- **Participation of civil society and other key stakeholders** will be critical in the identification of indicators and in the collection and analysis of data. This includes considering indicators that draw on additional data sources such as information reported by civil society and human rights mechanisms, provided that the data are based on sound procedures and methodology.
- In the interest of accountability, the **criteria for selection of indicators** need to be transparent. Several efforts have been made to formulate selection criteria, starting from

¹⁰ OHCHR, 2012, Human Rights Indicators: World Bank Study, Human Rights Indicators in Development: An Introduction (2010).

member states at Rio+20¹¹, to the UN Task Team¹² to a list of criteria proposed by the Office of the High Commissioner for Human Rights¹³.

18.8 Considerations for the inclusion of human rights in the content of targets and indicators:

- *Measuring socioeconomic goals:* Socioeconomic targets and indicators need to be aligned with social, economic and cultural rights. The guidance of the UN Committee on Economic, Social and Cultural Rights (CESCR) is authoritative and helpful in this regard – it has identified the main attributes of key social and economic rights. For most socioeconomic rights those attributes include the **availability, accessibility, acceptability and good quality** of services (often referred to as ‘AAAQ’). Socioeconomic indicators that reflect these and other key dimensions of human rights should be developed or prioritized¹⁴. A goal or target on *housing*, for example, should reflect ‘security of tenure’ as a key attribute of the right to adequate housing, e.g. through indicators on the number of homeless persons per 100,000 population or the number of victims of forced evictions reported by the UN and other relevant entities¹⁵. *Health* targets and indicators must reflect sexual and reproductive health and rights. This means, for example, that in order to ensure the provision of essential drugs as defined by WHO¹⁶, targets and indicators need to measure not only contraceptive prevalence, but also capture methods of contraception available, including emergency contraception. It also means ensuring access to emergency obstetric care services, which is not adequately monitored in current global frameworks¹⁷.
- Socio-economic indicators should measure whether countries use **the maximum of available resources** to realize social and economic rights, including resources available through international cooperation and assistance.¹⁸ This principle is based on the recognition in the Covenant on Economic, Social and Cultural Rights that achieving socio-economic rights need to be **progressively realized** but, in turn, require full fiscal and policy commitment and the fulfilment of certain immediate obligations such as the elimination of discrimination.

¹¹ Rio+20 Outcome Document, para 246, 247

¹² UN Task Team, 2013, Statistics and indicators for the post-2015 development agenda, para 53b

¹³ OHCHR, 2013, Who Will Be Accountable?, p. 66/67 and Annex

¹⁴ OHCHR, 2012, Human Rights Indicators, p. 88ff. outlines the main attributes of 14 human rights and suggests indicator tables based on those.

¹⁵ See meta data sheet in OHCHR, 2012, Human Rights Indicators, p.160.

¹⁶ WHO Model List of Essential Medicines as specified by the Committee on Economic, Social and Cultural Rights (E/C.12/1999/5)

¹⁷ Committee on the Elimination of Discrimination Against Women (CEDAW), General Recommendation 24 on Women and Health, 02/05/1999.

¹⁸ Committee on Economic, Social and Cultural Rights (CESCR), General Comment 3, para 13.

18.9 *Measuring governance, rule of law and related issues:* Targets and indicators on governance, rule of law and related issues should be included under a stand-alone goal as well as under relevant sectorial goals¹⁹. Targets and indicators need to be **aligned with existing civil and political rights, such as those related to public participation, personal security and administration of justice**. Work is currently underway to identify indicators which meet agreed standards of statistical rigour and which are action-oriented and policy-relevant²⁰. Illustratively, those could include indicators such as homicide rate per 100,000, proportion of persons that were victims of physical or sexual violence during past year, proportion of children under 5 whose birth has been recorded, proportion of victims of crime who reported them to the police (victimization surveys), percentage of total detainees in pre-sentence detention (average length of pre-sentence detention, proportion of seats in elected or appointed public bodies (national and local) and high-level positions (public and private) held by women and members of most disadvantaged groups.

18.10 *Measuring inequality and gender equality:* Based on the human rights principle of equality and non-discrimination, a stand-alone goal on equality could include, for example

- Indicators to measure different forms of discrimination: Direct discrimination is generally measured through events-based data, hate crimes statistics, or victimisation and situation testing surveys²¹ e.g. % of persons experiencing discrimination in relation to a specific goal, % of persons experiencing hate crimes.
- Indicators to measure inequalities and inequities within and between countries, for example using the Gini coefficient or the Palma ratio²². Inequalities in health, education, justice and other areas should be reflected by disaggregating data and setting targets to reduce inequalities under each and every relevant goal (see above).

18.11 Indicators to measure gender equality should be included in a goal on gender equality as well as across all other goals²³.

18.12 *Measuring a Global Partnership (global governance and means of implementation):* The international human rights framework recognizes that realizing human rights requires not only policies at the national but also at the international level, for example in areas such as migration, climate change, trade, governance and development²⁴, which relate to the issues of global governance and means of implementation. From the perspective of human rights, including the right to development, a goal on a global partnership therefore needs to include targets and indicators that facilitate effective international cooperation and also address

¹⁹ Issue Brief on Conflict, Rule of Law and Governance

²⁰ See, for example, the statistical note on Conflict, Governance and Rule of Law.

²¹ OHCHR, 2012, Human Rights Indicators

²² Cobham and Sumner, March 2013, Putting the Putting The Gini Back In The Bottle? 'The Palma' As A Policy-Relevant Measure Of Inequality

²³ In 2013, the UN Statistical Commission endorsed a minimum set of 52 gender indicators. For a more detailed discussion see the statistical note on Gender Equality.

²⁴ For example, the International Covenant on Economic, Social and Cultural Rights stresses the importance of international, especially economic and technical, co-operation (e.g. Art. 2, Art.11, Art. 22), the Declaration on the Right to Development promotes the duty of states to co-operate with each other in ensuring development and eliminating obstacles to development (e.g. Art. 3).

underlying global governance issues²⁵. Further work in this area is necessary to develop targets and choose indicators which draw on the right to development and promote key changes like the **meaningful reform of global governance institutions** (e.g. reforms that allow an equitable participation in voting practices in international mechanisms); **international policy coherence** across the human rights, trade, environmental and economic spheres (e.g. through trade and investment agreements that include human rights impact assessments, measuring developed country imports from developing countries and least developed countries which are admitted free of duty, promoting the elimination of agricultural subsidies in developed countries to export their agricultural products); and **international cooperation that transcends traditional aid** and includes new sources of financing, South-South cooperation, and technology exchange (e.g. measuring the use of financial transaction and other taxes, development aid that is untied, access to safe and affordable essential medicines, stolen asset recovery and successful prosecutions of tax fraud/money laundering). A partnership goal would also need to reflect the **human rights responsibilities of the private sector and businesses**, for example by measuring how businesses integrate the Guiding Principles on Business and Human Rights in their codes of conduct.

Data requirements, challenges and limitations

Data availability and data sources

18.13 There are at least four broad categories of data that can be considered when developing human rights sensitive indicators:

- events-based data
- socioeconomic and administrative statistics
- perception and opinion surveys and
- expert judgments²⁶

18.14 Different entities and actors collect one or more of these types of data. *Events-based data*, e.g. on disappearances, arbitrary killings or trafficking, is often collected by international human rights mechanisms, non-governmental organisations or national human rights institutions. Events-based data can underestimate (or sometimes, though rarely, even overestimate) the incidence of certain situations, if used in a casual manner to draw generalized conclusions for the country as a whole. In many instances, events-based data will depend on the awareness, access to information, motivation of those sharing the information, political situation and level of organization of the civil society organizations representing

²⁵ See, in addition, the statistical note on Global Governance.

²⁶ OHCHR, 2012, Human Rights Indicators; see also: UNDP, 2006, Indicators for Human Rights Based Approaches to Development in UNDP Programming: A Users' Guide

those affected, in the country concerned. Despite these shortcomings, events-based data can be a source of information on development progress if its statistical quality can be assured.²⁷

18.15 With regard to *socioeconomic and administrative statistics*, it is important to note that the availability of survey data has steadily increased, including through technical support of specialized UN agencies. Data collection through UNICEF-supported Multiple Indicator Cluster Surveys (MICS) and USAID-supported Democratic and Health Surveys (DHS) are, for example, now the primary source of disaggregated data (e.g. by wealth quintile, ethnicity, sex, area of residence, etc.) on the majority of MDG indicators. MICS provide data for more than 100 indicators (including 21 MDG indicators) which can be disaggregated by geo-zones, residence (urban, urban-poor, rural), gender, education, age, wealth, ethnicity / religion, language and other stratifiers or combinations of the above. National victimisation surveys are also essential sources of information in measuring personal security for instance²⁸. Administrative data can also be used for key structural indicators such as the ratification of international treaties relevant to the development agenda (e.g. international human rights instruments).

18.16 Many international NGOs and research institutes have acquired expertise in generating data based on *perception surveys or expert judgments* (e.g. Transparency International, Afrobarometer). The use of both those types of data sources should be explored while taking into account their potential shortcomings. While household perception and opinion surveys bring out the “voice of the people” and can capture underlying social norms, the method, with its focus on subjective information, can potentially fall short of producing reliable and valid indicators consistently. It may also not be adequately representative owing to coverage limitations and may yield measures that cannot support or allow cross-sectional comparisons. Data based on expert judgments is often criticized for their lack of validity and reliability, since they are often based on personal judgements of a limited number of observers.

Data gaps and what does it take to fill them

18.17 Socioeconomic and administrative data is the one most commonly used for the current MDGs. The UN Task Team, in its report on statistics and indicators for the post-2015 development agenda, reviews recent developments with regard to other data sources, in particular in relation to “new fields” such as inequalities, governance and rule of law and suggests that those will “to a large extent require the **development of new data sources** with national representativeness and sound benchmarking, some along more traditional lines, such as household surveys, some with methods outside the official statistics mainstream, such as opinion and satisfaction surveys, big data and crowd sourcing, and local reporting”. It stresses that while **data availability** must be considered, the experience with the MDGs showed that

²⁷ The situation of the countries affected by the Arab Spring is cited as example when events-based data on human rights indicate underlying issues when other monitoring efforts do not indicate any change yet.

²⁸ See UNODC and UNECE Manual on Victimization Surveys (ECE/CES/4).

“it **should not be a controlling criterion** in the selection of indicators”: the UN system was able to “promote improvements in data compilation and analysis such that many indicators at first considered unlikely to prove widely feasible are now an established part of MDG monitoring.” In addition, the UN Task Team confirms that “**impressive and ground-breaking work on methodologies and data collection** [in these areas] is well advanced” and that “within competent international agencies, working with national services, a **reservoir of expertise and commitment to statistics and indicators** on [these] emerging themes should not be underestimated”²⁹. Expanded data collection and analysis will certainly require the **strengthening of capacities**, including through international partnerships and new partnerships at the national level, for example between National Statistics Offices and National Human Rights Institutions. Lessons can be drawn from existing programmes such as the MICS global programme, through which UNICEF provides technical support and training to national partners.

Conclusions

18.17 Building the post-2015 agenda on human rights does not require a stand-alone goal on human rights or adding on specific human rights targets or indicators. It requires integrating human rights throughout the agenda. With regard to measuring progress on the future agenda, this means action across all goals to measure both outcome and effort, to disaggregate data, to ensure civil society participation and to apply transparent criteria when selecting goals, targets and indicators³⁰. It also means aligning all targets and indicators with the relevant existing human rights standards and the right to development (e.g. using the content of the right to education to develop targets for a goal on education).

18.18 Consultations since the Rio+20 Conference, both among experts and broader constituencies, have confirmed that there is a wealth of experience, expertise and data to draw on, to this end, both in the areas of the current MDGs as well as in “new areas” such as inequalities or governance. Where there are data gaps, statistical experts agree that, based on the MDG experience, data availability should not be a controlling criterion in the selection of indicators but that, instead, increasing technical support to member states to build capacities for expanding data collection and analysis will be paramount.

²⁹ UN Task Team, 2013, Statistics and indicators for the post-2015 development agenda, para 69, 70.

³⁰ The OHCHR conceptual and methodological framework on human rights indicators can provide guidance and examples of good practice in this regard.

Statistical note 19:

Global Governance^{1,2}

Main policy issues, potential goals and targets

19.1 According to the issue brief the goal is to achieve strengthened global governance that would allow strengthened collective action for tackling the sustainable development challenges. It is pointed out that global governance for sustainable development is mainly based on formal arrangements and treaty-based institutions with defined memberships, mandates and institutional machinery, such as the United Nations systems entities, Breton Woods institutions, World Trade Organization etc. or new government driven arrangements such as the G20. According to the issue brief, three issues commonly arise in governance discussions: effectiveness, representativeness and coherence, with the latter two affecting the first. This statistical note will subsequently discuss these three issues in the context of measuring global governance.

19.2 Effectiveness is not explicitly mentioned in the issue brief as a goal or target to be directly monitored. However, later on the issue brief mentions as a possible target sub-component the establishment of a UN-led monitoring and accountability mechanism with a focus on equitable and inclusive growth, environmental sustainability, human rights, equality, and peace and security. These are potential goals of the SDGs and post-2015 development agenda and therefore, it can be concluded that the effectiveness of global governance will be monitored and measured by the achievement of the SDGs and post-2015 goals in all countries.

19.3 In its suggestions, the issue brief focuses on the issue of representativeness. It is proposed that the post-2015 development agenda could define a target for the attainment of an inclusive and equitable system of global governance and governance of the global commons. The sub-components of this target may comprise, for example, enhancing participation of developing countries in multilateral institutions, increasing the latter's representativeness and accountability, and the establishment of an UN-led monitoring and accountability mechanism.

19.4 Policy coherence (coherence) can be described as consistency and coordination of different international initiatives. However, it can also be described as consistency between globally agreed goals and aspirations and policies at the national level. The issue brief does

¹ The measurement of global governance is an entirely new subject and this statistical note should be viewed as explorative first attempt to address measurement issues in this particular area within the scope provided by the issue brief. Global governance shares some of the aspects of governance at national level, but is very distinct. While governance refers to the relationship between governments and its citizens, global governance refers to the relationship or working arrangements between sovereign states.

² The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Germany, United Kingdom and OECD.

not suggest a target for either form of coherence. However, how to improve coordination within the UN system is extensively discussed.

19.5 One aspect of global governance is the global partnership for development which is reflected in goal 8 of the MDGs and which is covered in the issue brief “*Means of Implementation. Global Partnership for achieving sustainable development*” Its measurement aspects are covered in the respective statistical note.

Conceptual and methodological tools

19.6 *Measuring effectiveness:* Effectiveness of global governance can be understood as referring to the ultimate outcome of global policies. As indicated above, the achievement of global goals such as the MDGs or SDGs/post-2015 goals provides a comprehensive measure for effective global governance. The existing monitoring system for the MDGs provides the blueprint for such monitoring. The effectiveness of global governance in specific areas of global policy, such as climate change, global financial stability, trade etc. can be measured by the achievement of or progress towards specific targets in these areas.

19.7 *Measuring representativeness, participation and transparency*³: The three dimensions representativeness, participation and transparency relate to the process of global governance. These dimensions are either thought to influence the outcome of global policies or might be viewed as global governance objectives on their own. There are no conceptual frameworks or international recommendations on how to measure representativeness, participation and transparency of global governance arrangements and accepted definitions of those concepts for statistical purposes are absent. Within the various global governance arrangements there are different forms of representativeness such as by population size, by country (one country, one vote) or by financial contribution, etc., in combination with different voting arrangements (by majority, unanimous agreement, etc.). However, the issue brief refers to representativeness in terms of equitable participation and inclusiveness of all and in particular developing countries’ governments in the global decision making processes of which transparency is an important element.

19.8 Even without agreed statistical definitions, formal representation within global government mechanisms and transparency might be evaluated and measured by conducting structural assessments, which assess the existence of certain parameters such as, for example, voting rights of developing countries at international organizations. Otherwise, effective participation and inclusiveness appear to be subjective concepts and could be measured and monitored through opinion or perception surveys.

³ The dimensions participation and transparency are closely related to representativeness and are therefore included in the discussion (see issue brief).

19.9 *Measuring coherence:* Policy coherence as a dimension of global governance can be considered as having a strong influence on the outcome of global policies. There is no conceptual framework or international recommendation on how to measure the two types of coherence of global governance - the degree of consistency and coordination between global policies and the consistency and coordination between national, regional and international policies. Also, there is no accepted statistical definition for policy coherence.

19.10 Nevertheless, the consistency and level of coordination of different global policies can be assumed to be regularly assessed by policy makers themselves, as well as by outside experts and stakeholders. Opinion or perception surveys could be conducted to systematically inform about the perceived level of consistency and coordination. One aspect of policy coherence that can be, and is, frequently monitored and measured is the national compliance with globally (or regionally) agreed norms and treaties. In fact, compliance monitoring is a core task of many international organizations and various measurement instruments have been established.

19.11 *Lack of accepted statistical concepts and definitions:* There is no agreed definition or concept of global governance (the same applies to national governance). Its various dimensions such as effectiveness, representativeness, transparency, inclusiveness and coherence have no accepted statistical definitions and may be understood very differently across the world. This lack of statistical definitions and statistical concepts for global governance and its dimensions makes its comprehensive measurement difficult. Nevertheless, appropriate definitions of certain dimensions could be established within reasonable time. Whether and how individual dimensions could and should be weighed against each other is not established either.

19.12 Furthermore, there are different areas of global governance such as peace and security, human rights, economic affairs etc. The issue brief gives no indication what areas of global governance should be differentiated and monitored and how they should be weighed against each other.

Existing and new indicators

19.13 *Measures for the effectiveness of global governance:* The existing MDGs can be viewed, despite some limitations, as an indicator set that measures the overall effectiveness (or outcome) of global governance. The range of existing MDGs- or potential post-2015 outcome indicators is discussed in the subject specific statistical notes. However, some potential indicators apply specifically to certain areas of global governance. For example, the number of armed conflicts with international participation and the number of refugees resulting from such conflicts could be seen as indicators for the effectiveness of the international conflict resolution mechanisms. The effectiveness of the international legal system could be measured by the number of cases brought before international courts or by its efficiency (percentage of cases resolved), although the relevancy of such indicators is not established.

19.14 Subjective measures of institutional performance could be obtained from perception surveys of government officials of different countries or experts that, for example, measure the satisfaction of the respondents with the performance of the global governance system or specific parts of it.

19.15 *Measures for representativeness, participation and transparency of global governance:* Regarding representation and participation, the existence of certain elements such as voting (and veto) rights of countries can be assessed through structural assessments. Structural assessments could also be conducted in respect to the access, or ease of access, to information about the deliberations and decisions of global governance bodies equally for all governments and citizens which would be a measure for the transparency of global governance. Subjective measures of representation, participation and transparency could be obtained from perception surveys of government officials of different countries or experts, by for example, asking about the level of satisfaction with the existing arrangements.

19.16 *Measures for coherence of global governance:* There are no objective measures for the consistency and coordination of different global initiatives. Subjective measures could be obtained from perception surveys of government officials, experts or stakeholders. The number of countries that have adopted, translated into national law and effectively enforced specific international agreements might be a good indicator for the coherence between international and national governance. Also, the time lag between the signing of an international agreement and its national adoption or implementation could be measured. In fact, international and regional organizations frequently measure and report the compliance with their norms and treaties.

19.17 *Need for indicator development:* Indicators are needed to assess if a target is met. However, there has never been an explicit target related to global governance and indicators for global governance have not been discussed by the community of official statisticians.⁴ Some proposals for well-defined indicators exist, such as using voting rights at international organizations to monitor representation. However, all potential indicators have to be evaluated in respect to their relevance and according to statistical criteria.

Data requirements, challenges and limitations

19.18 Data sources for various potential post-2015 outcome indicators that measure the effectiveness of global governance are discussed in the different thematic statistical notes. This note will only discuss structural assessments and global surveys as additional data sources.

⁴ The Statistical Commission discussed in 2002 (see E/CN.3/2002/26) a wide range of indicators and concluded that there is a need to develop indicators on governance. This however referred to indicators related to national governance and not global governance.

19.19 Structural assessments measure the existence of certain conditions such as the existence of specific policies or the compliance with certain norms. Such assessments can be performed by outside experts or as self-assessment. Structural assessments are frequently conducted by international and regional organizations to monitor compliance with specific norms and standards. A main challenge of structural assessments performed by international and regional organizations can be the integrity and objectivity of the assessment, as both the international/regional organization and countries have a stake in its outcome. An important limitation of indicators obtained from such assessments is that the conditions that are measured can remain unchanged for a long time and that any progress towards change is not captured.

19.20 There are global, subjective/perception based surveys such as the Gallup World Poll and the World Values Survey that are used to assess national governance. Such global surveys can be also used to ask questions about global governance. However, the knowledge of survey respondents about elements of global governance may be very different or very limited, and strongly affected by the particular situation the country of the respondent is facing. Therefore, it may be difficult to achieve comparable results across countries. Also, global surveys that are representative are expensive and the above indicated global surveys do not cover all countries.

Conclusions

19.21 The MDG monitoring framework is providing and the post-2015 monitoring framework is expected to provide an outcome measure of the effectiveness of global governance. In a post-2015 monitoring framework greater emphasis might be put on the equal achievement of the goals and targets for each individual country in order to better reflect the aspect of inclusiveness of global governance. In this context, the need for adequate statistical capacity at national level to measure and monitor progress should be pointed out.

19.22 The monitoring of process variables such as representativeness, participation, transparency and coherence of global governance might provide insights on how to possibly further improve the outcomes or might be seen as objective in itself. To systematically assess and monitor dimensions of global governance such as representativeness, participation, transparency and coherence would require the development of concepts and definitions, indicators, methods of data collection, data sources and statistical capacity, although some concrete proposals on which one could build on exist (such as the use of voting rights to monitor representativeness). Structural assessments and perception surveys of government officials in different countries or experts can provide ad-hoc measures of these aspects of global governance.

Statistical note 20:

Sustainable Cities and Human Settlements¹

Main policy issues, potential goals and targets

20.1 In the Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda², it is recognized that with increasing urbanisation, strategies for managing the development of cities are critical to the achievement of sustainable development goals. Cities face a wide range of challenges, including sustainable transportation, management of water and sanitation, sustainable consumption and production, efficient energy supply, as well as affordable housing. At the same time, it is noted that vibrant and sustainable cities can make a key contribution to inclusive growth, and cities are the places where it is possible to generate the number of good jobs that young people are seeking. Good local governance, management and planning are the keys to making sure urbanization does not replace one form of poverty by another.

20.2 The Rio+20 Outcome Document, "*The Future We Want*", in its paragraph 134, argues that if they are well planned and developed, including through integrated planning and management approaches, cities can promote economically, socially and environmentally sustainable societies.

20.3 In the Report of the Secretary-General (A/68/202) of July 2013, meeting the challenges of urbanization is recognized as one of the key transformative and mutually reinforcing actions that apply to all countries that will be required to bring to life the vision of the development agenda beyond 2015. According to the report, some 70 per cent of the world's population will live in cities by 2050. Urbanization poses the challenge of providing city dwellers with employment, food, income, housing, transportation, clean water and sanitation, social services and cultural amenities. At the same time, living in cities creates opportunities for the more efficient delivery and use of physical facilities and amenities. Rural prosperity, land management and secure ecosystem services should form an integral part of sustainable urbanization and economic transformation. (para. 94)

20.4 In the quest for sustainable development, a focus on cities and human settlements is unique, because it foregrounds space and place as well as the subsidiarity of local government. Cities constitute an arena where key development strategies can be concretized if urban growth and expansion is effectively managed.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Germany, United Kingdom, United States of America and UNEP.

² http://www.un.org/sg/management/pdf/HLP_P2015_Report.pdf

Conceptual and methodological tools

20.5 Within the MDG framework, progress in sustainable cities and human settlements is monitored under Goal 7 (Ensure environmental sustainability). Under the goal, there is a specific target of “achieving by 2020 a significant improvement in the lives of at least 100 million slum dwellers”, known as Target 7D. However, Target 7D does not capture the full concept of sustainable cities and human settlement and has been over-shadowed by high urban population growth. There is a need for an integrated approach to measurement of development progress in cities and any indicator framework for sustainable cities and human settlements must not be narrowly defined.

20.6 UN-Habitat has a long experience of monitoring the situation within slums since the Habitat II Conference in 1996. It has developed various methodological tools applicable to household surveys, population and housing censuses, community profile, expert opinion and policy analysis. There is no widely accepted measurement framework for cities, however, and effort needs to be applied to achieving international consensus around a future measurement approach.

20.7 The WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation is the official United Nations mechanism tasked with monitoring progress towards the MDG Target 7C, which is to: "Halve, by 2015, the proportion of people without sustainable access to safe drinking-water and basic sanitation". The WHO/UNICEF JMS, in collaboration with UN-Habitat, has worked on the harmonization of methodological tools associated with water and sanitation.

Existing and new indicators

20.8 In the current MDG monitoring framework, the proportion of urban population living in slums has been monitored by at least one of four proxy characteristics: 1) lack of access to improved water, 2) lack of access to improved sanitation, 3) overcrowding (3 or more persons per room), or 4) dwellings made of non-durable material. These four dimensions measure physical features of slum conditions, depicting deficiencies of the environments in which slum dwellers live. At the outset of MDG monitoring, security of tenure was selected as one of indicators for assessing progress on the slum target. However, it has not been easy to measure or monitor the security of tenure, since the tenure status of slum dwellers often depends on de facto or de jure rights—or lack thereof. Given the absence of globally comparable data on security of tenure, this dimension has not been utilized in estimates produced to date.

20.9 It should be noted, however, the aforementioned characteristics do not capture the full nature of sustainable cities and human settlements. Progress has been made to develop indicators relevant to assess city sustainability such as access to public space and urban expansion. For instance, land allocated to street and other street components were measured in more than 100 cities and were used to prepare the publication “Streets as Public Spaces

and Drivers of Urban Prosperity”, launched in November 2013. Progress has also been made in other sectors relevant to sustainable development such as safety, mobility, resilience to natural disasters, air pollution reduction, cultural heritage and urban revitalization, energy use and green space.

20.10 Furthermore, UN-Habitat developed a City Prosperity Index, a tool to assess the cities’ prosperity across seven dimensions: 1) productivity; 2) infrastructure development; 3) environmental sustainability; 4) quality of life; 5) equity; 6) social inclusion, 7) urban form and structure including streets and public spaces. Building international consensus around a future measurement framework should be an important and critical current objective.

Data requirements, challenges and limitations

20.11 At the international level, UN-Habitat and its partners have a long history of data collection, monitoring and reporting in the area of sustainable cities and human settlement. Since 1996, the Global Urban Indicators Database has been regularly updated addressing key issues such as shelter, environment, social development, economic development and governance, with a specific focus on the Millennium Development Goals, particularly, its Target 7D on the improvement of slum dwellers.

20.12 The data collection mechanism has been through the establishment of urban observatories at the national and local levels, within a collaborative effort between UN-Habitat and its partners, particularly National Statistics Offices (NSOs), ministries responsible for urban issues, city and metropolitan authorities and the research community. This integrated system of partners work toward the collection of reliable, locally relevant and internationally comparable data on urban conditions and trends to inform all levels of policy making and the development of indicators that reflect priority issues within urban areas.

20.13 One of the main challenges in the development of indicators relevant to track progress on sustainable cities and human settlements is defining city boundaries. Cities rely mostly on data at different levels which vary according to each country's geographical administrative divisions: municipalities (ex: municipal budget data, birth, death records, etc.), districts (police records, etc.), metropolitan areas (transport data), enumeration areas (census) and others linked to administrative divisions. The challenge is to aggregate data from all these different types of areas.

20.14 It is encouraging that the development of GIS provides a platform that allows this challenge to be overcome. The ability of GIS to combine both spatial and socio-economic data helps to generate meaningful information in a short time. By providing decision makers with reliable and accurate information, GIS analysis will enable cities to prioritize issues and channel their attention to those parts of urban areas that are most neglected. New approaches

and methodologies to assess sustainability of cities are being developed, tested, and used in several cities. Most recently, the United Nations launched the initiative on Global Geospatial Information Management (UN-GGIM)³, setting the agenda for the development of global geospatial information and to promote its use to address key global challenges, including disaster risk reduction, sustainable development and urbanization.

Conclusions

20.15 Based on existing information on sustainable cities and human settlements, it is desirable to set numerical targets that shall be sufficiently realistic, operational and time-bound. They should be results-oriented in terms of sustainability of cities, and sufficiently specific as to clearly relate to public and policy concerns.. Indicators should be simple, clearly linked to the targets, measurable over time using data collected in countries in a cost effective and practical manner, help inform policy and be clear and easy to communicate to the general public and civil society.

20.16 Targets for sustainable cities and human settlements should build on existing mechanisms for data collection and analysis at the city level, such as local urban observatories which build urban monitoring capacity through a network of stakeholders with the aims: to create sustainable urban monitoring systems; to strengthen local capacity for the development and use of indicators; and to promote local ownership of indicator systems. Building international consensus around a future measurement framework should be an important and critical current objective.

³ <http://ggim.un.org/about.html>

Statistical note 21:

Sustainable Transport¹

Main policy issues, potential goals and targets (aligned with issue brief)

21.1 While transport is central to development many people in rural and urban areas do not have access to affordable, safe and clean transport. Transport services and infrastructure will be required to enable the mobility of people and goods needed for inclusive economic and social development and improved quality of life. Transport is central in shifting to sustainable low carbon societies but needs to be decoupled from impacts like air pollution, congestion, road traffic injuries and climate change. Key sustainability issues are: Rural and urban transport, air quality, road safety, and energy and climate.

- Urban transport systems can be improved through the development of well-designed mass transit systems linked with safe and attractive facilities for cycling and walking. An SDG target should be to double the number of people with access to affordable, quality mass transit.
- Rural transport services are critically important to development and agriculture. Halving the number of people without roads or adequate transport services has been proposed as a target. A target also needs to be developed for all-weather roads to serve the rural population.
- Transport infrastructure and systems should be designed, planned and adapted to deal with extreme weather and global sea level rise, especially as transport infrastructure investments operate on long time horizons.
- Urban air pollution is a major threat to global human health, especially small particulates. The transport sector can lead in implementing an SDG target to bring the air quality of 1.5 billion people within WHO guideline limits, which can be achieved with existing technologies and policies.
- Road Safety is deteriorating and has become one of the main killers of pedestrians, young and vulnerable people. Many cities and countries have shown that achieving an SDG target of halving road fatalities worldwide is achievable.
- And transport plays an important role in using energy more efficiently and reducing greenhouse gas emissions. The SDGs should include a target to double the efficiency of the global vehicle fleet.

21.2 These targets can be achieved using existing cost effective policies and technologies - many cities and countries have already achieved them. They need to be scaled up through inclusion of transport targets in the SDGs.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Canada, Germany, United Kingdom, United States of America, Eurostat, OECD (ITF), UNECE, WHO and WMO.

Conceptual and methodological tools (references)

21.3 *Methodology on measuring the number of people with access to mass transit.*

Several reports have been written on measuring convenience and service quality of public transportation², but no internationally agreed methodology exists. By way of example, OECD's definition³ of "accessibility to public transport" has recently been proposed as "the percentage of population living within a public transport service area in a metropolitan area". In a case study of the city of Daejeon, Korea Republic, two approaches were applied:

- (i) Accessibility to public transportation defined as 400 and 800 meters from a metro, train and bus station without consideration of road network or frequency. The result was that 68% of city's population are living in the area accessible by public transport
- (ii) Accessibility to public transportation defined as the distance (5 or 10 minute walk from stations) now based on road network combined with average frequency of transportation (≥ 5 or < 5 times per hour). The results in this case was that 51% have access to public transportation with a breakdown into various levels of accessibility

21.4 This second approach was tested in major cities in Europe as well, which showed that Stockholm has a relatively high accessibility rate and Tallinn a relatively low rate.

21.5 *Methodology on measuring transport infrastructure:* An agreed methodology does also not exist for measuring transport infrastructure. Statistics Canada⁴ recently developed a general model for an accessibility measure of the transport infrastructure based on the principle of a gravity model. This model relates to the situation of mostly rural or remote communities with limited access to retail, health and similar services. The model accounts for two dimensions:

- (i) Travel time (as measure of proximity) between one community and all communities within 150 minutes travel time from the community of reference (travel time is calculated from representative points located in the most populated area of the community) , and
- (ii) Size of services provided in the community (measured by total revenue for selected economic activities - by ISIC codes - at the community level)

21.6 The tools proposed to make the calculations in terms of travel time to the nearest services are the Google Maps Distance Matrix API which takes into account the road network by road type, speed limit, and type of surface, including the network for regular ferries, and the Business Register as a central data source to access a consistent and well maintained

² See, for instance, *Measuring and Valuing Convenience* by Richard ANDERSON, Benjamin CONDRY, Nicholas FINDLAY, Ruben BRAGE-ARDAO, Haojie LI, Imperial College London, United Kingdom, (December 2013), <http://www.internationaltransportforum.org/jtrc/DiscussionPapers/DP201316.pdf>

³ See *Accessibility to public transport: the OECD approach* by Tadashi MATSUMOTO, June 2013, Paris, <http://www.oecd.org/gov/regional-policy/PPT-Transport.pdf>

⁴ See *Methodological issues in the development of accessibility measures to services: challenges and possible solutions in the Canadian context*, Alessandro Alasia, Statistics Canada, June 2013, <http://www.oecd.org/gov/regional-policy/PPT-Alasia.pdf>

inventory of businesses with national coverage and with business revenues aggregated by community.

21.7 *Methodology on measuring air quality:* The WHO *Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide*⁵ (2005) can be used as the basis for measuring air quality on those four pollutants.

21.8 *Methodology on measuring road fatalities:* Estimating global road traffic deaths could follow the methodology proposed by the WHO for its publication *Global status report on road safety, 2013*⁶. Total road traffic deaths were calculated from the death registration data and population data reported to WHO. According to WHO an SDG target of halving road fatalities worldwide would result in saving about 103 million lives by 2030. Injury deaths classified as “undetermined intent” were redistributed pro-rata across all unintentional and intentional injury categories within age-sex groups. These data were then used to compute age-sex-specific death rates for road traffic deaths. Where completeness was assessed at less than 100%, death rates were adjusted. These death rates were applied to the UN estimates of population by 5-year age group and sex to estimate total road traffic deaths for each country-year.

21.9 In regards to the methodology for measurement of road fatalities, UK would like consideration given to having differentiated targets for each country, taking into account the current “baseline” and trend (i.e. what the number is at present) for each country. The UK’s road casualty rates are amongst the lowest in the world and although we are continuing to see year-on-year falls, it doesn’t necessarily seem appropriate to set the same targets for countries with very different starting points.

21.10 *Methodology on measuring the efficiency of the global vehicle fleet:* The Global Fuel Economy Initiative (GFEI), which is supported by – among others – the United Nations Environment Program (UNEP), the International Energy Agency (IEA) and the International Transport Forum (ITF), published its methodology to calculate fuel economy of light duty vehicles around the world at <http://www.globalfueleconomy.org>. Further discussion is necessary to determine what constitutes the ‘global fleet’. At EU level, the average EU fleet is expected to meet certain performance targets, but some countries are allowed to be higher and some to be lower in absolute terms provided the average is met. To deliver this, the EU sets specific targets for manufacturers and penalises them if they fail to meet. It is still unclear how it is envisaged that the global fleet will be defined? For example, the South American fleet could set a target to double their fuel efficiency and then look to apply that through manufacturers, or they could set targets in each country.

⁵ See http://www.who.int/phe/health_topics/outdoorair/outdoorair_aqg/en/index.html

⁶ See http://www.who.int/violence_injury_prevention/road_safety_status/2013/methodology/estimating_global_road_traffic_deaths.pdf?ua=1

21.11 GFEI also published a toolkit named ‘the Cleaner, More Efficient Vehicles Tool’, which provides information and real-world examples of technology and policies used around the globe to improve auto fuel economy. It is aimed at policy makers seeking to understand and design effective policies to improve energy efficiency and lower greenhouse gas emissions in their countries, see <http://www.unep.org/transport/gfei/autotool>.

21.12 *Further supporting methodologies:* The World Climate Data and Monitoring Programme, a sub-program of the World Climate Programme, provides an international coordination of the World Meteorological Organization (WMO) Climate System Monitoring. Priorities of the programme include the provision of guidance to the WMO Members in the area of climate data and climate assessment and monitoring; and the publication and dissemination of WMO authoritative reports on the status of the global climate. More information can be found at http://www.wmo.int/pages/prog/wcp/wcdmp/index_en.php. An overview of ongoing research for the monitoring of extreme weather and climate change events can be found at <http://wmo.asu.edu/#global>. All this information is relevant for infrastructure development in the transport sector in relation to all weather roads.

Existing and new indicators

21.13 The existing MDG indicators do not include specific indicators on Sustainable Transport. Only one indicator includes reference to sustainable transport, namely MDG indicator 7.2 *CO₂ emissions, total, per capita and per \$1 GDP (PPP)*. This indicator is defined as the *total carbon dioxide (CO₂) emissions* from energy, industrial processes, agriculture and waste (minus CO₂ removal by sinks), presented as total emissions, emissions per unit population of a country, and emissions per unit value of a country’s *gross domestic product (GDP)*, expressed in terms of *purchasing power parity (PPP)*.

21.14 The European Union uses the measure of *Energy consumption of transport relative to GDP* and refers to this in a chapter on Sustainable Transport in the publication *Sustainable development in the European Union*⁷ (2013). This indicator is defined as the ratio between the energy consumption of transport and GDP (chain-linked volumes, at 2000 exchange rates). The energy consumed by all types of transport (road, rail, inland navigation and aviation) is covered, including commercial, individual and public transport, with the exception of maritime and pipeline transport.

21.15 This indicator compares the growth of the energy consumption of transport with that of GDP at constant prices. Annual data on final energy consumption by transport mode, for all products (crude oil, oil products, natural gas, electricity, solid fuels and renewables). The basic energy quantities data are in physical units and converted to energy units, i.e. tonnes of oil equivalent, to allow the addition of different fuel types. The GDP figures are taken at constant prices to avoid the impact of the inflation, base year 2000. This ratio is the result of

⁷ See http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-02-13-237

dividing the transport energy consumption by the GDP. The indicator is expressed as index with (2000=100). The indicator is a Sustainable Development Indicator (SDI). It has been chosen for the assessment of the progress towards the objectives and targets of the EU Sustainable Development Strategy.

Data requirements, challenges and limitations

21.16 Global data on urban transport systems do not exist. UITP as an association of public transport companies has data for their members and the participation of developing countries' companies is relatively low. Disparate data exist on a city basis in individual city or regional studies, some available from the World Bank, but harmonized and comparable data on the world level simply do not exist. To obtain this data would require going down to municipal/city level to obtain these data as urban transport is most often not under direct responsibility of national governments and their transport policies. In general, there is a lack of data on the number of people with access to mass transit and on transport infrastructure.

21.17 *Availability of data on air quality:* Detailed data on air quality exist from individual country sources, like the EPA in the United States⁸. At the global level, WHO maintains a database on outdoor air pollution for about 90 countries and details for almost 600 cities, see http://www.who.int/phe/health_topics/outdoorair/databases/en/index.html. This website also gives some visualizations of the air condition around the world.

21.18 *Availability of data on road fatalities:* WHO also maintains a database on road fatalities in its Global Health Observatory Data Repository, see <http://apps.who.int/gho/data/node.main.A996?lang=en>. It provides for all countries the estimated number of road traffic deaths and the distribution of road traffic deaths by type of road user. The data proposed for monitoring this target (death registrations with "road accident" listed as a cause, as collated and analysed by WHO) are the only data that will exist for all countries involved. However, the data differ from UK's official statistics on road casualties, which use police-reported accidents, which are accepted as the UK's standard measure of road casualties by a number of international organisations – the European Commission (via the EC-wide CARE database of road casualties), OECD (via the International Transport Forum) and the UNECE (United Nations Economic Commission for Europe), to enable international comparisons. If death registrations are used to monitor this goal there will be a disconnect between the figures UK uses to hold itself to account. With that in mind, UK would argue there is a case for countries that can provide their own road fatality measures to do so, rather than relying on the death registrations collated by WHO. To ease the burden, the UN could make use of the international data already available for many countries via the EC, OECD and UNECE, perhaps using the WHO data for countries where other sources are not available.

⁸ See <http://www.epa.gov/airquality/airdata/>

21.19 *Availability of data on the efficiency of the global vehicle fleet:* GFEI and its partners provide an overview of data on a more efficient global vehicle fleet in the publications *Fuel Economy State of the World 2014*⁹ and *International comparison of light-duty vehicle fuel economy: An update using 2010 and 2011 new registration data*¹⁰. As indicated above, online information can be found at <http://www.unep.org/transport/gfei/autotool/>

Conclusions

21.20 Given the key sustainability issues, which were identified in the substantive brief around rural and urban transport, air quality, road safety, and energy and climate, this statistical note points to methodologies for measuring access to mass transportation, transport infrastructure, outdoor air quality, road fatalities and the efficiency of the global vehicle fleet. However, no internationally agreed methodology exists to monitor improved access to mass transportation or improved transport infrastructure, and consequently no international data are available on these topics. The examples shown need to be further developed.

21.21 WHO provides international guidelines on monitoring outdoor air quality and measuring road fatalities, and maintains an international database for the purpose. Finally, the international partners of the Global Fuel Economy Initiative have been able to provide both a methodology and data to monitor the efficiency of the global fleet of light duty vehicles. Some further reflection is necessary on what constitutes a global fleet. A similar exercise for heavy-duty vehicles would also be needed.

⁹ See http://www.globalfueleconomy.org/Documents/Publications/gfei_state_of_the_world_2014.pdf

¹⁰ See http://www.globalfueleconomy.org/Documents/Publications/wp8_international_comparison.pdf

Statistical note 22:

Sustainable Consumption and Production (including chemicals and waste)¹

Main policy issues, potential goals and targets

22.1 Sustainable Consumption and Production (SCP) is about “the production and use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of further generations”. SCP is not necessarily about consuming less, but rather about “doing more and better with less”. Promoting a shift to SCP patterns entails increasing resource efficiency and promoting sustainable lifestyles. It offers important contributions for poverty alleviation and the transition towards low-carbon and green economies. Shifting to SCP requires building cooperation among different stakeholders (governments, business and civil society) as well as across economic sectors in all countries. The need for a move towards sustainable consumption and production (SCP) has been articulated in numerous international agreements including Agenda 21 and the 2002 World Summit on Sustainable Development. More recently, the outcome document of the Rio+20 conference, “The Future We Want”, recognized that “poverty eradication, changing unsustainable patterns of production and consumption and protecting and managing the natural resource base of economic and social development are overarching objectives of, and essential requirements for, sustainable development”².

22.2 Current patterns of consumption and production are unsustainable and continue to have environmental, economic and social consequences. Environmental consequences include, among others, conversions of natural ecosystems into agricultural land, loss of biodiversity and loss of ecosystem services. Among the many economic and social consequences, it is worth noting that current patterns of unsustainable consumption and production are leading to decreased access to natural resources especially for marginalized groups such as small food producers and indigenous people, and lower levels of economic growth. SCP is also closely linked with the release of toxic chemicals and waste since production and consumption processes use chemicals and generate waste.

22.3 As noted in the TST Issue Brief, achieving SCP will require implementing policies that: address the drivers of unsustainable consumption and production patterns (e.g., lack of knowledge and prices not reflecting true costs); adopt a life-cycle approach aimed at

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Denmark, Sweden, United Kingdom and UNEP.

² UNCSD (United Nations Conference on Sustainable Development). 2012. The future we want. Outcome of the UNCSD. A/CONF.216/L.1.

enhancing resource efficiency; and aim to increase supply of and demand for sustainable products. Given its cross-sectorial nature, achieving SCP patterns will entail, among others: greater emphasis on resource productivity, involving structural change towards less resource intensive activities and broad diffusion of efficiency-enhancing technologies, including through measures such as environmental tax reforms and the phasing out of environmentally harmful subsidies; mainstreaming SCP in decision-making at all levels, through national plans on SCP, or integrating SCP objectives into relevant national plans and strategies and sectorial policies; and addressing “market failure”, through regulation and pricing that internalizes environmental and social costs, and incentives for innovation, international cooperation and investment in SCP.³

22.4 SCP objectives have been included in a number of multilateral agreements. The Ten-Year Framework of Programmes on Sustainable Consumption and Production Patterns, which was formally adopted at the Rio+20 conference, includes as an objective contributing to resource efficiency and decoupling economic growth from environmental degradation and resource use. Aichi Target 4 states that “[b]y 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.” Targets and goals on SCP could include benchmarks for resource use in production and consumption (and related resource efficiencies and decoupling), economic activity of sectors producing goods in a sustainable manner, and generation of emissions and waste.

Conceptual and methodological tools

22.5 The United Nations Statistical Commission adopted the *System of Environmental-Economic Accounting (SEEA) Central Framework*⁴ as an international statistical standard. The SEEA Central Framework provides the internationally agreed framework for measuring the relationships between the environment and the economy. Environmental–economic accounts as described in the SEEA Central Framework link economic data about individual industrial activities with environmental data in a consistent way, including data on emissions to air and water, energy use, water use and wastewater, the generation of solid waste and material flows from the environment to the economy, within the economy and from the economy to the environment. Such data can be used to derive indicators and measure progress towards goals related to resource use in production and consumption, and resource efficiency, as well as for footprint calculations and assessing environmental pressures abroad caused by domestic activities/imports. When time series are available, this type of information from the environmental economic accounts can also be used for decoupling analysis.

³ For more information see TST Issues Brief: Sustainable Consumption and Production, including Chemicals and Waste

⁴ United Nations (2014). *System of Environmental-Economic Accounting 2012 – Central Framework*. Forthcoming. Available from <http://unstats.un.org/unsd/envaccounting/seearev/>

22.6 As mentioned above, achieving SCP patterns requires a mix of instruments including policy tools such as taxes, subsidies and permits. The monetary accounts described in the SEEA provide additional information on the impact of such regulatory and fiscal measures. They provide a coherent framework in which to analyse alternative fiscal and regulatory options, monitor progress and set targets for particular sectors of the economy. Key statistics include data on economic instruments such as emission permits, and environmental taxes and subsidies (e.g. energy taxes, transport taxes and resource taxes) that are implemented for the purposes of changing behaviours that have an impact on the environment. Changing the decisions and behaviour of both producers, largely in the private sector, and consumers will be a key to achieving SCP patterns.

22.7 The SEEA Central Framework also provides guidance on the compilation of information on the environmental goods and services sector (EGSS) of the economy, and environmental protection expenditures. EGSS statistics provide indicators on the production of environmental goods, services and technologies, and the level of related employment, investments and exports. This information can be used to assess the extent to which the economy is responding to various policies and initiatives aimed at improving resource efficiency and shifting towards SCP patterns in general.

22.8 Similarly, information on environmental protection expenditures allow for the identification and measurement of society's response to environmental concerns through the supply of and demand for environmental protection services and through the adoption of production and consumption behaviours aimed at preventing environmental degradation.

22.9 The SEEA family of statistical standards also includes the SEEA Water and the SEEA Energy. Given the importance of the availability, production and use of water and energy to overall human well-being and to attaining SCP patterns, the SEEA Water and the SEEA Energy provide further elaborations on how to compile water and energy information that can be used to design policies and guide their implementation to achieve SCP patterns.

22.10 The SEEA Experimental Ecosystem Accounting,⁵ a companion document to the SEEA Central Framework, provides the statistical framework to monitor ecosystems and their linkages with economic and human activities and thus the provision of ecosystem services, the losses of biodiversity, changes in ecosystem condition and capacity as well as ecosystem degradation that may result from unsustainable consumption and production activities. It is a synthesis of current knowledge giving a starting point for the testing of ecosystem accounting at national and sub-national level.

⁵ United Nations (2014). *System of Environmental-Economic Accounting 2012 – Experimental Ecosystem Accounting*. Forthcoming. Available from <http://unstats.un.org/unsd/envaccounting/seearcv/>

22.11 The Framework for the Development of Environment Statistics (FDES 2013), adopted by the UN Statistical Commission as the framework for strengthening environment statistics programmes in countries provides an organizing structure to the data needed for the measurement of SCP (data on the use of natural resources, production and consumption, generation of emissions and waste, environmental expenditures etc.) and identifies the scope of these data in the Basic and Core Sets of Environment Statistics.

Existing and new indicators

22.12 Even though the MDGs do not contain specific indicators on SCP, strong links can be drawn between the two. MDG target 7A, for example, calls for the integration of sustainable development principles into country policies and programmes and the reversal of losses of environmental resources.

22.13 Several sustainable development indicator frameworks and also specific ones for sustainable consumption and production have been developed at the international and regional level, including the United Nations Commission on Sustainable Development (UNCSD), OECD, European Union and the European Environment Agency and UNEP.

22.14 The most directly applicable indicator set is the third, revised set of UNCSD sustainable development indicators that was finalised in 2006 by a group of indicator experts from developing and developed countries and international organisations⁶. This set consists of 50 core indicators that form part of a larger set of 96 indicators of sustainable development and 13 major themes, of which SCP is one. The SCP theme comprises the 12 specific indicators (each of which has an exclusively environmental focus), while another 34 indicators from other themes are characterized as being linked to SCP⁷.

22.15 SCP encompasses all productive and consumptive activities. As such, indicators on the production and use of particular resources, such as water and energy, have been developed and are produced by many countries. Such indicators though are not necessarily comparable across countries and time due to the use of different definitions and classification. Relevant measures derived from the SEEA would allow for such comparison and benchmarking; they include the following key aggregates and indicators:

- Resource use of production and consumption (material, water, energy)
- Generation of emissions and waste by economic activity and households
- Resource efficiency
- Employment in the environmental goods and services sector as a proxy for green jobs
- Environmental protection expenditures

⁶ <http://www.un.org/esa/sustdev/natlinfo/indicators/factsheet.pdf>

⁷ UNEP: SCP Indicators for Developing Countries - A Guidance Framework <http://www.unep.fr/shared/publications/pdf/DTIx1085xPA-SCPindicatorsEN.pdf>

Data requirements, challenges and limitations

22.16 As SCP encompasses all productive and consumptive activities, the data necessary for its measurement cover a wide range of statistics on production and consumption of goods and services displaying natural resource use, but also resource productivity to highlight the economic output per unit of natural resource input, which can potentially be further adjusted to natural resource consumption.. Much of the data used in the environmental accounts comes from sources which in many cases are already well-established, e.g. official statistics on agriculture, forestry, mining, manufacturing, energy, water or emissions and waste. In this case the compilation of accounts simply requires a change in perspective in order to bring the existing environmental data onto a consistent basis with the economic data. This process can lead to changes in the composition and presentation of economic data, so that the integrated dataset is more useful for environmental policy. In the short term compilation of the accounts may require a degree of modelling, but in the longer term it is usually possible to adapt the collection of source data so that it can be more readily used in the accounts.

22.17 Environmental accounts generally give a macro-level view of the relationship between the environment and the economy, and cannot always be easily used for detailed policy applications. This limitation applies especially to the detail usually available on specific products and materials, and also sometimes to those policy applications which relate to detailed sub-sectors of the economy. In defining SCP targets and indicators it will also be necessary to take account of the social objectives that are implicit in the achievement of SCP patterns. Those targets and indicators should guide decisions so as to sustain the provision of human needs over the long term, including by promoting resource efficiency which effectively expands the resource base on which economic activities and human welfare depend.

22.18 The emphasis on the use of information as the main driver of behavioural change implies the need for a robust and wide-ranging evidence base. Much of the information currently used comes from one-off studies of particular issues, with the environmental-economic accounts and other national statistical sources such as household surveys used to provide a broader contextual background. There is a need for sustained, regular production of data related to SCP.

22.19 Estimates on environmental expenditures and EGSS have to be based on a variety of sources as few countries have comprehensive supply side surveys of environmental expenditures and EGSS producers. This data integration approach combines existing sources in an accounting approach, using modelling where needed. This approach poses conceptual as well as a compilation challenges. One conceptual challenge is to fully understand how the different sources measure the activities of interest. Generally, there is not a one-to-one relationship between relevant concepts and there is not yet guidance on the concordance of different concepts.

22.20 Information on environmental taxes and subsidies usually is collected by tax authorities within countries. Hence, there is a need for closer collaboration between those collective administrative data (such as tax authorities) and statistical agencies. As with EGSS, there are conceptual issues around definitions that need to be rectified since definitions used by administrative units might not conform to those used by the statistical agencies.

22.21 Considering that the large numbers of stakeholders producing SCP relevant data in uncoordinated fashion often stemming from not applying a consistent statistical system, there is a need to strengthen the national statistical system through the adoption of statistical standards such as the SNA and the SEEA and the establishment of coordination mechanism among various data providers to ensure the sustained production of information to inform SCP.

Conclusions

22.22 SCP is a relatively new policy area with an evidence base which is still under development: many of the data sources needed to develop policy and monitor its outcomes are yet to be established. Many countries already collected information on the use of natural resources and the environment in production and consumption processes, or on environmental expenditures, taxes and/or subsidies. The SEEA Central Framework, given its focus on measuring the relationship between the economy and the environment, provides the statistical framework suited for macro indicators on sustainable production and consumption. The adoption and implementation of the SEEA provides the way forward for developing a coordinated data production process, which avoids duplications and overlaps and is cost-effective and efficient. The research community is building models that can be used for analysis on a global scale until the national data situation has become more mature.

22.23 Capacity building to develop the national statistical systems and efforts to strengthen the national coordinating mechanism among various data providers are crucial for the sustained production of information to inform the achievement of SCP patterns. A system's approach will have to encompass the collection and utilization of the combination of economic, social and environmental data required to give a clear vision of where we are now, and how we shift towards SCP patterns.

Statistical note 23:

Climate Change and Disaster Risk Reduction¹

Main policy issues, potential goals and targets

23.1 The impacts of climate change on SD are observed through both slow-onset events (e.g. sea level rise, increasing temperatures, ocean acidification, glacial retreat and related impacts, salinization, land and forest degradation, loss of biodiversity and desertification) and extreme weather events. Climate change impacts are already disrupting livelihoods in many parts of the world, particularly those that are dependent on predictable temperature and rainfall, clean water availability, and arable land. Sea level rise will also increasingly affect coastal communities by exacerbating erosion and leading to loss of land and coastal industries.

23.2 The report by the HLP suggests that risk sensitive development must be at the heart of the post-2015 development agenda and that the next SD framework would effectively address disaster and climate risk if it includes a goal/target on overall loss of life and economic losses as well as related targets under the main potential sectorial goals that contribute to risk reduction (i.e. related to water, education, environment and health). Lessons from the Hyogo Framework for Action (HFA)² can provide guidance on goals and targets. The HFA Mid-Term Review and the third session of the Global Platform for Disaster Risk Reduction³ (2011) recognized that targets encourage more accelerated implementation, as well as greater accountability of action. Its fourth session (May 2013) in Geneva called for an immediate start of work to be led by the United Nations International Strategy for Disaster Reduction (UNISDR)⁴ to develop targets and indicators to monitor the reduction of risk and the implementation of the future international framework for disaster risk reduction (HFA2).

23.3 As seen, the main policy issues to be included in the SDGs goals and targets involve a sequence of drivers of climate change, greenhouse gas (GHG) emissions, impacts of both slow on-set events and extreme events, mitigation and adaptation, as well as disaster risk and its management for reduction. This sequence is also useful to organize the selection of feasible statistics and indicators to inform stakeholders adequately at the different levels.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: the Netherlands, United Kingdom, FAO, UNECE and UNISDR.

² The Hyogo Framework for Action (HFA) is a ten year plan of action adopted in 2005 by 168 governments to protect the lives and livelihoods against disasters. It is the key instrument and global blueprint for implementing disaster risk reduction. Its overarching goal is to build the resilience of nations and communities to disasters by achieving substantive reduction of disaster losses by 2015.

³ The Global Platform for Disaster Risk Reduction was established in 2007 as a biennial forum for information exchange, with the goal to improve implementation of disaster risk reduction through better communication and coordination amongst stakeholders. The Global Platform is organized by UNISDR. The Global Platform for Disaster Risk Reduction is the world's foremost gathering of stakeholders committed to reducing disaster risk and building the resilience of communities and nations.

⁴ The International Strategy for Disaster Reduction (ISDR) is a strategic framework adopted by United Nations Member States in 2000. The ISDR guide and coordinates the efforts of a wide range of partners to achieve a substantive reduction in disaster losses. It aims to build resilient nations and communities as an essential condition for sustainable development. The United Nations Office for Disaster Risk Reduction (UNISDR) is the secretariat of the International Strategy of Disaster Reduction and disaster risk reduction community, which comprises numerous organizations, States, intergovernmental and non-governmental organizations, financial institutions, technical bodies and civil society. UNISDR serves as the focal point for the implementation of the Hyogo Framework for Action (HFA).

While a well-established reporting process, guided by the United Nations Framework Convention on Climate Change (UNFCCC), exists for greenhouse gas emissions, comparable statistics on other issues related to climate change are not easily available.

Conceptual and methodological tools

23.4 Given the complexity of climate change and disaster risk reduction, producing statistics to inform about them requires the organization of a wide range of statistical topics and statistical information collected and produced by different national and international institutions.

23.5 There is a demand for reliable statistics that can support the measurement and analysis of the drivers and the social and economic consequences of climate change and the related mitigation (and adaptation) measures. The statistics required to provide the evidence for policy development and research cover a very wide range of scientific, economic and social data. No one statistical framework can hope to embrace such a range of information needs. There are a number of different frameworks created for different purposes that can be used to organize these statistics, as acknowledged in the UN Economic Commission for Europe (UNECE) Task Force on Climate Change Related Statistics. These are the first recommendations that represent useful steps for national statistical offices to enhance their contribution to analysing issues related to climate change and to improve their support to greenhouse gas inventories with official statistical data.⁵

23.6 The frameworks for structuring climate change related information assessed in more detail in the report of the UNECE Task Force include the following:

- a. The United Nations System of Environmental-Economic Accounting (SEEA) Central Framework provides an integrated set of basic statistics that can be re-grouped into a variety of indicators that are useful for the analysis of climate change.
- b. The Framework for the Development of Environmental Statistics (FDES) also facilitates the description of climate change related statistics through its main components and the related variables as it provides a structure for a set of basic and core climate change and disaster related statistics that can guide statistical and indicator work.
- c. The IPCC Schematic Framework (Climate Process Drivers, Climate Change Evidence, Impacts and Vulnerability, Mitigation and Adaptation) can be linked to the SEEA-CF and FDES. It was specifically developed for analytical purposes and to understand and manage climate change, but it can also serve to identify relevant statistics and indicators and to assess data availability.
- d. Climate change related information could be structured according to the Driving forces – Pressure – State – Impacts – Response (DPSIR) model, which is widely used

⁵ www.unece.org/fileadmin/DAM/stats/documents/ece/ces/2014/Recommendations_on_climate_change_related_statistics.pdf

as an analytical tool to describe and structure state of the environment reports and sustainable development indicators.

- e. The Natural Capital Approach is one of the frameworks that can help link climate change related information on environmental quality and human well-being through the flows of ecological goods and services from natural assets to humans.
- f. Another way for categorizing climate change related statistics is in line with the way climate change policies and discussions typically are structured – Impacts, Mitigation and Adaptation (IMA).

23.7 The SEEA Central Framework, adopted by the UN Statistical Commission as an international statistical standard in 2012, has been recognized as a useful framework for climate change related statistics, as it provides value added in analysing mitigation and adaptation strategies and their trade-offs and provides an integration framework for the derivation of climate change indicators. As a statistical system the SEEA Central Framework is comprehensive in that it encompasses all known aspects of the environment-economy interaction and uses concepts and classifications consistent with System of National Accounts. The SEEA Experimental Ecosystem Accounting looks at these relationships from the point of view of ecosystems. The value of data organized according to the SEEA could be further increased by linking these data with social and demographic statistics to permit their analysis in the context of, for example, vulnerable population groups.

23.8 The Framework for the Development of Environment Statistics (FDES 2013), adopted by the UN Statistical Commission as the framework for strengthening national environment statistics programmes identifies a basic and a core set of statistics related to climate change and disasters and provides an organizing structure that links them together with all other related fields of environment statistics. The FDES 2013 and the SEEA Central Framework are compatible.

Existing and new indicators

23.9 Existing indicators of relevance to climate change and disaster risk reduction include those used or implicit in the UNFCCC and IPCC reporting systems (e.g. national and sectorial GHG emissions, national adaptation and mitigation plans and actions and flows of finance and technology); the UNECE Protocol on Pollutant Release and Transfer Registers (PRTR)⁶ with geo-referenced data on industrial pollutants, including greenhouse gas emissions; the Hyogo Framework for Action indicators of progress; and the Aichi biodiversity targets. MDG indicators that are most relevant include MDG7, indicator 7.2 CO₂ emissions, total, per capita and per \$1 GDP (PPP). Several other MDG indicators are closely related to the cross-cutting issue of climate change and risk reduction

⁶ For more information on PRTR : www.unece.org/prtr_grt2013.html, www.unece.org/env/pp/welcome.html and prtr.net/

23.10 Indicators on climate change adaptation and mitigation have been proposed, but are often difficult to calculate and disseminate regularly because of considerable data gaps, particularly in developing countries. International agreements in both concepts and methodologies are crucial in order to be able to respond statistically to the new SDG monitoring framework. For example, proposals for integrating resilience into the SDGs framework have been made to date by different institutions (see UNISDR, 2013). The proposals discuss potential indicators and targets for including a specific goal on disaster resilience, as well as considering the opportunities for building disaster resilience into targets and indicators into other sector goals. Overall, disaster resilience is a cross-cutting issue relevant across various sectors, and affecting individuals and institutions at all levels (from local to national, regional and global and vice versa). Clear definitions are necessary to further develop statistical work and possible indicators in this area. The Demographic Explorer for Climate Adaptation (DECA), developed by the UN Population Fund with partners, is an interesting example of combining official statistical data with other information for the purposes of disaster risk analysis and climate change adaptation. The automatic spatial analysis tool is available at the first stage for Indonesia⁷. It assembles available data into detailed categories (e.g., hazard levels, land use type, housing materials, age groups, education levels, infrastructure types) so that the user can combine data categories for specific groups of people or targeted geographic areas.

23.11 Indicators on the impact of climate change and disasters have been produced by the relevant international agencies, and also within countries. Emissions by sector of activity are important (i.e. globally, two thirds of GHGs are emitted by the energy sector while 20-30% by agriculture, forestry and other land uses). Most key indicators can be disaggregated to discriminate between the respective contribution by economic activity or by the sector receiving the impact of the extreme event and disasters. A number of other statistics, indicators and thematic areas are currently being used by the IPCC and UNFCCC, as well as other global, regional and national institutions. Some examples of existing indicators sets are mentioned in the report of the UNECE Task Force. There is a lack of information especially on the socio-economic impacts of climate change.

23.12 While generic targets and indicators on disaster management have been developed under the HFA in consultation with countries, challenges have been faced in translating these targets into consistent efforts across countries. These challenges include: difficulty measuring targets given the cross-cutting nature of disaster risk reduction, limited connection with existing goals/targets of development frameworks like the MDGs, lack of access to data collection and monitoring tools; and the lack of recognition of disaster risk reduction as a

⁷ The Demographic Explorer for Climate Adaptation (DECA) for Indonesia: nijel.org/un_popclimate/deca

development principle. To date, the achievement of the HFA has been monitored against a set of 22 core indicators across the five Priority Areas⁸.

Data requirements, challenges and limitations

23.13 Statistics on the emissions of GHGs to the atmosphere can be found in countries reporting to UNFCCC. GHG emissions, emission reduction and mitigation actions are communicated by parties to the UNFCCC regularly through National Communications (NC). In addition, Annex I parties report their emissions annually. Non-Annex I parties have significant capacity gaps that limit their ability to report regularly. All parties to UNFCCC will need to report biennially, starting at the end of 2014. Such reporting, which will include GHG National Inventories and planned Mitigation actions, including Nationally Appropriate Mitigation Actions (NAMAs) and Reducing Emissions from Deforestation and Degradation (REDD+) activities, are called Biennial Update Reports (BURs). A robust national GHG inventory, including projected emissions in coming decades, is the basis for parties to UNFCCC to highlight emission hotspots, plan efficient national and sub-national action, and document mitigation activities against business-as-usual reference emission levels. NCs from parties are available from UNFCCC; Yearly National Inventory Reports (NIRs) from Annex I countries are available since 1990. Only a few complete time series are available for non-Annex I parties.

23.14 In addition, national communications to the UNFCCC require reporting other information than emissions much of which is available from the statistical system. These include data on socio-economic developments, national circumstances, impact of policies and measures on emissions, basic data used for emission projections, data on vulnerability, financial resources and assistance, transfer of technology, education, training and public awareness. Many gaps exist in these data that should be filled as these requirements will remain the same for a number of years. The availability of data varies a great deal across countries. However, the general issues highlighted by the in-depth reviews of national communications include the following:

- Impacts of climate change on key economic sectors (for example, tourism) and social issues;
- Mitigation: Cost and effect of policies and measures across sectors, financial resources for mitigation, technology transfer;
- Adaptation: Measures taken to minimize adverse impacts of climate change and extreme events, vulnerability assessment (for example, of the health sector and biodiversity), financial resources for adaptation, investment etc.

⁸ Through an on-line HFA Monitor progress is benchmarked by countries on a scale of 1 to 5, complemented by means of verification and a qualitative description. Although this has generated the most significant global repository of information available on the progress reported by governments in reducing disaster risk, the experience of three biennial review cycles in 2009, 2011 and 2013 has highlighted some of the main challenges⁸. Recognising these weaknesses, a new system of indicators for risk management could be adopted. The immediate indicator would comprise the level of disaster loss as indicator of success of risk management.

23.15 The measurement methodology⁹ to estimate emissions of GHGs guides countries in their reporting to UNFCCC. The Greenhouse Gas Inventory Data of the UNFCCC contains the most recently submitted information, covering the period from 1990 to the latest available year, to the extent the data have been provided by countries. The GHG data contain information on anthropogenic emissions by sources and removals by sinks of the six principal GHGs (carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆)) that are not controlled by the Montreal Protocol. The GHG emission statistics are usually presented disaggregated by source category. Linking GHG emissions to other statistics remains a challenge due to differences in classifications. Efforts to connect economic information to climate change related issues, for instance by using the SEEA Central Framework, or by improving possibilities to link GHG emissions and water use to economic activities would facilitate multi-sectorial analyses of the drivers of climate change.

23.16 For non-Annex 1 countries, internationally comparable estimates of CO₂ emissions can be found in the Carbon Dioxide Information Analysis Centre (CDIAC) database (see: <http://cdiac.ornl.gov/>). CDIAC acquires or compiles, quality assures, documents, archives, and distributes data and other information concerning carbon dioxide.

23.17 In regard to the concentrations of CO₂, NASA and NOAA produce and disseminate long series on carbon dioxide concentrations (http://climate.nasa.gov/key_indicators) in the global atmosphere, based on their basic research on current global concentrations by direct measurement with a global monitoring station network and past to thousands of year indirectly from CO₂ contained in ice cores from the past. These science based indicators and statistics are further disseminated in numerous international and national website

23.18 As to key statistics and indicators about the evidence of climate change at the global level, there are international agencies that provide them with adequate quality and timeliness. These include long series on carbon dioxide concentrations in the global atmosphere, global surface temperature, Arctic sea ice, land ice, sea level and land ice, glacial retreat, extreme events and ocean acidification, etc.

23.19 Regarding the disaster risk, the UNISDR has developed a Global Risk Model for a series of GAR. It measures annual average loss (AAL) and probable maximum loss (PML) based on probabilistic modelling. Currently the data set includes AAL and PML for earthquake, cyclones and floods under the return period of 250 years. The data is open to

⁹ GHG emission inventories are developed by Parties to the Convention using scientific and methodological guidance from the Intergovernmental Panel on Climate Change (IPCC), such as Revised Guidelines for National Greenhouse Gas Inventories (1996), IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (2000) and IPCC Good Practice Guidance on Land Use, Land-use Change and Forestry (2003). *IPCC Guidelines for National Greenhouse Gas Inventories* are approved internationally and developed through an international process. The IPCC Guidelines were first accepted in 1994 and published in 1995. UNFCCC COP3 held in 1997 in Kyoto reaffirmed that the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories should be used as "methodologies for estimating anthropogenic emissions by sources and removals by sinks of greenhouse gases" in calculation of legally-binding targets during the first commitment period.

public via UNISDR's website. For GAR 15, the UNISDR will expand the data set by adding Tsunami PML and volcanic ash exposure data and by allowing multiple return periods.

23.20 Occurrence and direct impact of extreme events and disasters is usually recorded by the affected countries authorities and as administrative records and geo-spatial information it can be used to be transformed in statistics and indicators series. Most international databases portraying extreme events, disasters and their impact based their statistics on national information, sometimes complemented by their own. In addition, statistics on hazard prone areas and on the exposure to disasters (i.e., population living in hazard prone areas), are also relevant.

23.21 At the global level, CRED and its Emergency Database¹⁰ provides a series of methodological and conceptual tools for international reference, including the criteria needed to qualify and event as a disaster¹¹, the definition of disasters¹², their classification and other elements that are useful tools to harmonize the statistical work in this field. Additionally, CRED undertakes data compilation, validation and analysis. It provides open access to its data through its website. In addition to providing information on the human impact of disasters, such as the number of people killed, injured or affected, EM-DAT provides disaster-related economic damage estimates and disaster-specific international aid contributions

23.22. While the scope of CRED database covers relatively intensive disasters, many countries suffer from accumulation of low-severity and high-frequency disasters (extensive disasters). To grasp a whole picture of disaster, the UNISDR promoted the establishment of disaster loss database covering both intensive and extensive disasters. Furthermore, for GAR13, the UNISDR invented a methodology to assign economic value to the loss data and applied the methodology into 56 country's databases. The initiative has been expanding and in 2014 74 countries will develop disaster loss database. The data is open to the public via website.

23.23. Regarding the systematic collection of vulnerability data which influence the disaster risk, many organisations have initiatives, such as the IDB's Indicator of Disaster Risk and Risk Management, JRC's InForm and DARA's Risk Reduction Index. Depending on the objective of database development, the scope and territorial coverage of database is different.

¹⁰ Since 1988 the WHO Collaborating Centre for Research on the Epidemiology of Disasters (CRED) has been maintaining an Emergency Events Database EM-DAT <http://www.emdat.be>. It was created with the initial support of the WHO and the Belgian Government. The main objective of the database is to serve the purposes of humanitarian action at national and international levels. It is an initiative aimed to rationalise decision making for disaster preparedness, as well as providing an objective base for vulnerability assessment and priority setting. EM-DAT contains essential core data on the occurrence and effects of over 18,000 mass disasters in the world from 1900 to present. The database is compiled from various sources, including UN agencies, non-governmental organisations, insurance companies, research institutes and press agencies.

¹¹ A disaster can be categorized using the CRED Emergency Events Database (EMDAT) criteria, that is at least one of the following criteria must be fulfilled: a) Ten (10) or more people reported killed; b) One hundred (100) or more people reported affected; c) Declaration of a state of emergency; or d) Call for international assistance has been made.

¹² The Centre for Research on the Epidemiology of Disasters (CRED) defines a disaster as an "unforeseen and often sudden event that causes great damage, destruction and human suffering."¹² It often surpasses local capacities to respond to it and requires external assistance at the national or international level. A disaster is often described as a result of exposure to an extreme event.

23.24 Systematic collection and analysis of these data can provide key information to governments and agencies in charge of disaster risk management activities including relief and recovery activities. It also aids the incorporation of health issues into development and poverty alleviation programmes. However, there is a lack of international consensus regarding best practices for collecting these data. Together with the complexity of collecting reliable information, there remains huge variability in definitions, methodologies, tools and sourcing.

23.25 As a regional initiative, the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC) has developed a handbook which may be useful to other countries and regions, “UNECLAC: Handbook for Estimating the Socio-economic and Environmental Effects of Disasters”. It evaluates the overall impact of disasters associated with natural events and includes a methodology for evaluating this impact. This analysis of disaster impact in terms of damage and losses makes it possible to estimate the impact of disasters on economic growth, on the population’s living conditions and on environmental conditions in the region.

23.26 Within countries, the most common data sources are administrative records and in some cases maps, aerial photography and satellite imaging produced by national and sub-national authorities responsible for disaster management and assistance, emergency management and response agencies, insurance companies, optical and radar satellite operators for satellite information, as well as seismic monitoring and research centres.

23.27 Although the connections between urban planning, poverty, location of human settlements in risk areas, social and environmental vulnerability and disasters impact is in general well understood, constructing statistics to inform in these relations capturing the complexity of the phenomena is fairly difficult and require significant investment in capacity building and statistical development in the affected countries. Considerable statistical progress is required in these two areas in the upcoming years.

Conclusions

23.28 The UNECE Task Force on Climate Change Related Statistics recommendations state that national statistical offices should work more closely with greenhouse gas inventory producers to ensure that official statistics meet the needs of greenhouse gas inventories. Moreover, official statistical data should be developed in light of the needs of climate change analysis and policy making; and the existing statistics produced by various institutions be organised to improve access to the information. Existing environmental, social and economic statistics should be better organised for the purposes of climate change analysis. Also, the usefulness of the existing statistics for climate change analysis should be improved by reviewing existing data collection systems and geo-referencing the data. Improvements in data and statistics are needed: improved timeliness, regularity in collection, longer time series, greater detail both with regard to economic activities and geographic breakdown,

linking data across statistical domains for integrated analysis, requiring datasets using consistent structures and scopes, improved accessibility to data currently scattered across organizations, and improved interpretability, especially for complex scientific data.

23.29 The recommendations by the UNECE Task Force present a good starting point for improving the contribution of official statistics to climate change analysis and greenhouse gas inventories. Progress in the area will require action by national statistical offices as the coordinators of national statistical systems both nationally and internationally. The need for underlying data and regular statistics to inform the policy aspects of climate change and disaster risk reduction remains a pressing requirement and a great challenge for developing countries. Climate change and disaster risk reduction statistics are spread over a large proportion of the domain of environment, social and economic statistics in all countries. Statistics pertaining to the different steps of the described sequence are necessary to monitor climate change and to observe how it is affecting different countries and regions, particularly in relation to disaster occurrence and risk reduction.

23.30 The statistics to calculate potential SDG indicators in this issue are more developed at national and international levels for the climate change drivers including emissions of GHGs and sectorial activity statistics identifying the economic activities responsible for those emissions. Scientific data and monitoring data are available for climate change evidence statistics. While disaster loss and risk data have been improving and expanding in coverage, their development still needs support from the international community. Developing and least developed countries, SIDS, among others, still encounter important challenges when producing statistics about the impact of the disasters and other long term effects of climate change. Statistics and indicators about mitigation and adaptation of climate change and also about disaster risk reduction are less developed and require worldwide investment in statistical capacities for producing them and making them available for monitoring and decision making. Furthermore, as related information is scattered across databases of a variety of producers, it is largely unstructured and often not harmonised across countries, data and statistics should be analysed under an established conceptual framework to contribute to better decision making.

23.31 Recent conceptual and methodological developments, such as the SEEA Central Framework and the SEEA Experimental Ecosystem Accounting provide tools to link environmental and economic data in a consistent manner and thus will facilitate the derivation of many robust indicators relevant to climate change and disaster risk reduction.

Statistical note 24:

Oceans and Seas¹

Main policy issues, potential goals and targets

24.1 Oceans and seas cover more than 70% of the earth's surface and contain 97% of the planet's water. More than 50% of the world's population live within 60 km of the ocean; over 1.5 billion people rely on ocean caught fish for most of their protein needs; over three billion people depend on marine and coastal resources for their livelihoods; and the oceans contribute US\$ 70 trillion to global GDP annually.² They contribute to poverty eradication by creating sustainable livelihoods and decent work in fisheries and marine aquaculture, shipping and shipbuilding, ports, tourism, oil, gas, mining, and maritime transportation industries. In addition, oceans are crucial for global food security and human health. Oceans are also the primary regulator of the global climate, capture and store about 30% of carbon dioxide produced by humans and provide us with water and the oxygen we breathe. Finally, oceans host huge reservoirs of biodiversity.

24.2 Yet, there are increasing, complex challenges in preserving and maintaining healthy, resilient and productive oceans. The impact of anthropogenic pressure on marine environment is ever increasing, including both resource depletion and degradation of marine environmental health. Key natural ecosystems are being lost or severely degraded, such as salt marshes, mangrove forest, coastal wetlands, coral reefs, marine prairies and river estuaries, whose survival is key to human wellbeing in the planet. Main threats to the oceans can be divided into five broad categories.

- (1) Unsustainable extraction of marine living resources, including for example overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices as well as the usage of harmful subsidies that contribute to IUU fishing and overcapacity. Over half of current global fish stocks are fully or over-exploited. The unsustainable extraction of marine non-living resources (e.g. deep sea mining; offshore oil and gas drilling) is also cause for concern.
- (2) Ocean acidification and climate change impacts which are caused by increasing atmospheric greenhouse gas concentrations. Negative effects of climate change include increased frequency and intensity of weather and climate extremes, ocean warming, sea-level rise, as well as changes in ocean circulation and salinity. Ocean acidification may have potentially devastating impacts on marine ecosystems, including loss of shellfish, coral reefs (e.g. through coral bleaching) and calcareous plankton.
- (3) Marine pollution from a number of marine and land-based sources, including solid and plastic waste, heavy metals, persistent organic pollutants (POPs), pesticides,

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Denmark, Eurostat, DESA-DSD, UNESCO and UNDP.

² [The Ocean Solution, http://www.weforum.org/sessions/summary/ocean-solution](http://www.weforum.org/sessions/summary/ocean-solution), Copyright 2012 World Economic Forum

nutrients (nitrogen and phosphorus), oil, hazardous substances, radioactive materials, and anthropogenic underwater noise. More than 80% of marine pollution is derived from land-based sources.

- (4) Alien invasive species that may threaten complex regional ecosystem relationships and marine infrastructure.
- (5) Physical alteration and destruction of marine habitat which are caused by unsustainable coastal area development (e.g. direct construction on reef platforms), submarine infrastructure (e.g. submarine cables), unsustainable tourism, fishing operations in fragile or vulnerable marine areas (e.g. seagrass beds, coral reefs) and physical damage from ship groundings and anchors.

Conceptual and methodological tools

24.3 Data for oceans and seas are collected by an array of institutions, including governments, commercial operations and non-governmental organizations for a variety of purposes. The methods used to collect data include netting, tagging or other trapping (e.g. for fish species), a variety of instruments attached to ships, the seafloor, moorings, and autonomous platforms (e.g. to sample water quality, water temperature etc.) and remote sensing (e.g. satellites), which can only measure surface properties.³ The resulting data takes many different forms, from reporting a single variable measured at a single point (e.g. a species name) to very large multivariate datasets.

24.4 A variety of data are collected about oceans and seas, particularly for national territorial seas, and not so much for international waters and oceans. A wide number of global ocean sampling and monitoring programs emerged over the last 50 years, from GEOSECS in the 60-70's to the many contemporary global programs. In addition, various satellites have dramatically increased the amount and type of ocean data that is available and being analysed. However, while a wide range of information is collected, it is generally not done systematically, with sparse spatial coverage and little time series data.⁴

24.5 In 2012, The IOC/UNESCO-led Task Team for an Integrated Framework for Sustained Ocean Observing (IFSOO) identified the need for improved co-ordination and integration of ocean observation data. The IFSOO recommended a governance framework model be implemented to improve communications and data sharing across the community, which was adopted by the IOC-WMO-UNEP-ICSU Global Ocean Observing System (GOOS).

24.6 There is currently no international framework that outlines methodologies, best practices or common frameworks or standards for management and exchange of data relating

³ Meaden, G.J. & Aguilar-Manjarrez, J., eds. 2013. Advances in geographic information systems and remote sensing for fisheries and aquaculture. <http://www.fao.org/docrep/017/i3254e/i3254e.pdf>

⁴ Intergovernmental Oceanographic Commission of UNESCO. 2013. *IOC Strategic Plan for Oceanographic data and Information Management (2013-2016)*. (IOC Manuals and Guides 66) 45 pp.

to oceans and seas. Although there have been many efforts to develop common standards and frameworks for different aspects of oceans and seas information, these have never been widely adopted.⁵ To date, largely independent observing systems have evolved to meet the needs of particular disciplines and end users.⁶

24.7 Agencies such as the, Intergovernmental Oceanographic Commission (IOC) and The World Meteorological Organization (WMO) are working with the ocean and sea community to obtain broad agreement and commitment to common frameworks, standards and best measurement practices.

24.8 The System of Environmental-Economic Accounting (SEEA) Central Framework adopted as international statistical standard by the United Nations Statistical Commission in 2012⁷ and the SEEA Experimental Ecosystem Accounting welcomed by the Statistical Commission as “an important first step in the development of a statistical framework for ecosystem accounting”⁸, provide a statistical framework to link data on the condition of the oceans and the ecosystem services they provide with human activities such as sea transport, energy use, emissions, fisheries and aquaculture.

24.9 The Framework for the Development of Environment Statistics (FDES 2013) adopted by the Statistical Commission as a framework for strengthening environment statistics programmes in countries provides an organizing structure and a Basic and a Core Set of Environment Statistics including those relevant to the environmental, economic and social aspects of oceans⁹.

Existing and new indicators

24.10 The relevant MDG is Goal 7 Ensure environment sustainability. The existing indicators for oceans and seas are:

- 7.4 – Proportion of fish stocks within safe biological limits.
- 7.6 – Proportion of terrestrial and marine areas protected.

24.11 Another MDG closely related to oceans and seas is:

- 7.7 – Proportion of species threatened with extinction.

24.12 FAO fairly systematically tracks the proportion of global fish stocks that over, under and fully exploited and UNEP WCMC and IUCN rather well tracks protected areas and the number of species across different taxa that are at various threat levels for extinction.

⁵ Intergovernmental Oceanographic Commission of UNESCO. 2013. *Ocean Data Standards, Vol.3: Recommendation for a Quality Flag Scheme for the Exchange of Oceanographic and Marine Meteorological Data*. (IOC Manuals and Guides, 54, Vol. 3.).

⁶ *A Framework for Ocean Observing. By the Task Team for an Integrated Framework for Sustained Ocean Observing, UNESCO 2012, IOC/INF-1284 rev., doi: 10.5270/OceanObs09-FOO*

⁷ Statistical Commission – Report on the forty-third session (28 February-2 March 2012)

⁸ Statistical Commission – Report on the forty-fourth session (26 February-1 March 2013) <http://unstats.un.org/unsd/statcom/doc13/2013-Report-E.pdf>

⁹ <http://unstats.un.org/unsd/statcom/doc13/BG-FDES-Environment.pdf>

However, there are currently limited levels of detail available for MDG indicators 7.4 and 7.7.¹⁰ Only the proportion of marine areas protected (7.6) is released by international regions within the MDG indicator website, which reports data from 168 countries with at least 2 observations (excluding modelling).¹¹

24.13 Several of the CBD Aichi targets (e.g. Aichi target 11: “By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.”) are also relevant to oceans and seas. A wide range of ocean and sea indicators have been developed for the specific needs of particular regions or organisations (see Appendix).

Data requirements, challenges and limitations

24.14 Collecting data can be expensive and challenging due to the vast area of global oceans and seas and the complexity of interactions between different variables. Therefore, the systematic production of marine and ocean statistics and indicators is affected, particularly outside of territorial seas.

24.15 There is a major discrepancy between the scale at which data are typically gathered, and at which the data and information are needed. Threats to oceans and seas such as climate change, depletion of fish stocks, and pollution, have generated a need for data and information on all scales including regionally. Data sharing mechanisms and integration of relevant available local datasets and global datasets is necessary to create a data and information base to support national needs as well as global decision-making.¹²

24.16 There are a number of shortfalls within the existing systems to deal with the broad range of applications, the operational requirements for data and information, the integration of satellite and in situ data, and an increased variety of physical, chemical, and biological parameters. The following recommendations are drawn from the Intergovernmental Oceanographic Commission of UNESCO. 2013. *IOC Strategic Plan for Oceanographic data and Information Management*.

24.17 In order to strengthen existing data and information systems the following requirements must be met:

- Improve ability to integrate regional and global data systems.

¹⁰ See <http://mdgs.un.org/unsd/mdg/DataAvailability.aspx>

¹¹ See <http://mdgs.un.org/unsd/mdg/DataAvailability.aspx>

¹² Seys, J.; Pissierssens, P.; Vanden Berghe, E.; Mees, J. (2004). Marine data management: we can do more, but can we do better? Ocean Challenge 13(2): 20-24 [http://www.iode.org/index.php?option=com_content&view=article&id=3&Itemid=33]

- Improve the capability and functionality of systems in the centres managing oceanographic data and information. This includes the continuing capacity development of staff in these centres.
- Exploit more sophisticated algorithms and software technologies to increase the amount of automation for data processing and quality control.
- Address the needs of both the scientific users and society at large for the demand for access to quality data and information, including the needs identified by the Framework for Ocean Observing (FOO).

24.18 Some of the issues which need to be addressed to strengthen existing data and information systems include:

- Improve National recognition and adherence to “timely, free and unrestricted international exchange of oceanographic data” as advocated by the IOC Oceanographic Data Exchange Policy.¹³
- Improve ability to integrate local, regional and global data systems.
- Improve the capability and functionality of systems in the centres managing oceanographic data and information. This includes the continuing capacity development of staff in these centres.
- Exploit more sophisticated algorithms and software technologies to increase the amount of automation for data processing and quality control.
- Address the needs of both the scientific users and society at large for the demand for access to quality data and information, including the needs identified by GOOS through use of a Framework for Ocean Observing (FOO).

Conclusions

24.19 Statistics relating to oceans and seas are generally limited in scope and do not meet the information needs of global decision makers.

24.20 Data are predominantly produced using various independent methods, frameworks, standards, collected on regional or local scales and designed to meet the needs of particular users. This causes significant challenges and limitations in the production of aggregated, integrated coherent global indicators.

24.21 There is a need for improved coordination, integration and cooperation among data owners and the user communities. Further work is also required in obtaining an agreed framework that can align common standards and best practices; this will help improve statistical measurement, data analysis and interpretation.

¹³ See http://www.iode.org/index.php?option=com_content&view=article&id=51&Itemid=95

24.22 In the short to medium terms there appears little scope to improve the current indicators, owing to the limitations in data availability. The Global Ocean Observing System should be encouraged to continue its work and the Friends of the Chair should consider asking this team to expand their work to include the development and population of both statistics and indicators.

24.23 The SEEA provides a statistical standard for measuring the stocks in and flows between the oceans, seas and the economy; such as e.g. the fish stocks and changes therein as well as the economic information related to fisheries including the contribution of the fisheries and associated industries to GDP, the contribution of fisheries to national wealth and measure of depletion of fishery resources. The SEEA Central Framework complemented with the SEEA Experimental Ecosystem Accounting, will provide a statistical framework to measure ecosystems in a comparable way across countries and over time.

Appendix: Table comparing existing data and sources

Organisation	Indicator / Data	Description
<u>Millennium Development Goals (MDG)</u>	7.4 - Proportion of fish stocks within safe biological limits 7.6: Proportion of terrestrial and marine areas protected 7.7: Proportion of species threatened with extinction	7.4: Proportion of fish stocks within safe biological limits means the percentage of fish stocks of which abundance is at or above the level that produces the maximum sustainable yield. 7.6: The proportion of a country's terrestrial protected areas as well as marine protected areas in territorial waters (up to 12 nautical miles from the coast). 7.7: An index of the change in threat status of species in their natural habitat, based on population and range size and trends. The proportion of species expected to remain living in the near future in the absence of any conservation action.
<u>Food and Agriculture Organisation of the United Nations (FAO)</u>	Fisheries Catch and Production Data-main indicator derived is the degree of exploitation of fish stocks.	<ul style="list-style-type: none"> • Fish catch, production and aquaculture is split by production from inland and marine areas and by species and region. • Coordinating Working Party on Fishery Statistics outline concepts and methods recommended by the FAO.
<u>Ocean Health Index (OHI)</u>	An index score based on the 10 Goals of: <ul style="list-style-type: none"> • Food Provision • Artisanal Fishing Opportunities • Natural Products • Carbon Storage • Coastal Protection • Coastal Livelihoods & Economics • Tourism & Recreation • Sense of Place • Clean Waters • Biodiversity 	<ul style="list-style-type: none"> • The OHI evaluates the condition of marine ecosystems according to 10 anthropocentric goals, which are intended to represent the key ecological, social, and economic benefits that a healthy ocean provides to humans. • The index score is the average of the 10 goal scores, which are in turn informed by 113 components. • Available at country and global level.
<u>Intergovernmental Oceanographic Commission of UNESCO (IOC)</u>	Contributes to a number of data and information systems, including: <ul style="list-style-type: none"> • International Oceanographic Data and Information Exchange (IODE) • Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) • Global Climate Observing System (GCOS) • Harmful Algal Bloom Programme (IOC HAB) 	<ul style="list-style-type: none"> • IODE includes a range of data collections, however spatial and temporal coverage is sparse for oceans and seas. Various databases have been compiled that bring together data from many different sources including the IODE Ocean Data Portal. • IODE initiative- Global Ocean Surface Underway Data (GOSUD)- aims to develop and implement a data system for ocean surface data, acquire and manage these data and to provide a mechanism to integrate these data with other types of data collected in the world oceans. • IODE's Ocean Biogeographic Information System (OBIS) - world's largest open-access database on the diversity, distribution and abundance of all marine life, initiated by the Census of Marine Life and now operational under IOC/IODE. It involves a community of 500 institutions in 56 countries providing geo-referenced data on marine species. • Works jointly on JCOMM which aims to improve and coordinate international oceanographic and marine meteorological observing, data management and services, combining the expertise, technologies and capacity development capabilities of the meteorological and oceanographic communities. • Works jointly on GCOS is to provide comprehensive information on the total climate system, involving a multidisciplinary range of physical, chemical and biological properties, and atmospheric, oceanic, hydrological, cryospheric and terrestrial processes. • IOC HAB has a number of data products including: Harmful Algal Event Database, IOC Taxonomic Reference List of Toxic Plankton Algae, International Directory of Experts in Harmful Algae and Their Effects on Fisheries and Public Health, and IOC Bibliographic HAB Database

<u>Biodiversity Indicators Partnership (BIP)</u>	<p>Aichi Biodiversity Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approached, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe biological limits.</p>	<p>Marine Trophic Index (MTI)- Measure the impacts of fisheries on the world's marine ecosystems by reporting a measure of species replacement indices by fisheries. The MTI is calculated from catch composition data from the FAO after being spatially allocated to the Exclusive Economic Zones of countries (EEZs) or other relevant spatial ecosystem components.</p>
<u>Global Ocean Observing System (GOOS)</u>	<p>Collection of ocean observing and information delivery systems providing near real time measurements of the state of the oceans including salinity, temperature and Global Mean Sea Level (GMSL)</p>	<ul style="list-style-type: none"> • For sea level: <ul style="list-style-type: none"> a. Aims to establish high quality global and regional sea level networks for application to climate, oceanographic and coastal sea level research. b. Uses 290 sea level stations around the world, gauges in straits and polar areas and island based altimeter calibration stations. c. Uses satellites, moored instruments, free floating buoys and profilers to collect temperature and salinity data. d. Permanent system for observations, modelling and analysis of marine and ocean variables to support operational ocean services worldwide. • Argo buoys are an international project collecting information on temperature and salinity of the upper part of the world's oceans. Uses a global array of 3,000 robotic floats to measure temperature and salinity and to provide a quantitative description on the evolving state of the ocean and patterns of ocean climate variability. • GOOS coordinates in situ observations from research and commercial ships, moored and autonomous platforms, responding to requirements for Essential Ocean Variables for climate. • GOOS is expanding into biogeochemical and biological variables: <ul style="list-style-type: none"> o the IOC-SCOR International Ocean Carbon Coordination Project (IOCCP) promotes the development of a global network of ocean carbon observations for research through technical coordination and communication services, international agreements on standards and methods, advocacy, and links to the global observing systems. • A new GOOS biology panel is examining the requirements for sustained observation of ecosystem Essential Ocean Variables
<u>World Climate Research Programme (WCRP)</u>	<p>Coordinates a number of research projects looking at oceans and how they relate to climate topics such as global atmosphere, oceans, sea- and land-ice, the biosphere and land surface.</p>	<ul style="list-style-type: none"> • Process ocean observing studies developed under WCRP and its Climate Variability and Predictability Project have often led to long-term legacy sustained ocean observations. • Surface Ocean Lower Atmosphere Study (SOLAS) an international research initiative aiming to understand the key biogeochemical-physical interactions and feedbacks between the ocean and atmosphere.

<p><u>International Council for the Exploration of the Sea (ICES)</u></p>	<p>Collection of datasets relating to the North Atlantic marine environment including:</p> <ol style="list-style-type: none"> 1. Biological community 2. Contaminants and biological affects 3. Fish eggs and larvae 4. Fish predation 5. Fish trawl survey 6. ICES historical plankton 7. Oceanographic 	<ul style="list-style-type: none"> • Coordinates research on oceanography, the marine environment, the marine ecosystem, and on living marine resources in the North Atlantic. • The ICES Data Centre manages large dataset collections a wide variety of oceanographic data and meta-data types into its databases from regional and country organisations. • Has decade long time series on certain datasets and station level ocean observation data.
<p><u>Transboundary Water Assessment Programme (TWAP)</u></p>	<p>Global Indicators are being developed to address:</p> <p>Ocean productivity : Chlorophyll a, Primary productivity, Sea surface temperature</p> <p>Fisheries Annual catch, catch value, marine trophic index, fishing in balance index, stock status, catch from bottom impacting gear, fishing effort.</p> <p>Pollution and Ecosystem Health Nutrients (N, P, Si), coastal eutrophication potential, POPs in plastic pellets, plastic debris density, change in MPA coverage, reefs at risk index, mangrove extent, coral reef extent, cumulative human impacts, delta vulnerability index.</p> <p>Socio-economic aspects %GDP fisheries, %GDP international tourism, coastal population, human development index, deaths caused by climate related natural disasters</p> <p>Governance Indicators such as assessment of governance architecture.</p>	<p>The TWAP, which is funded principally by the GEF, implemented by UNEP, arose out of the need for: 1. A global baseline assessment of the status and changing condition of transboundary water systems resulting from human and natural causes, which will allow the GEF and others to set science-based priorities for financial resource allocation and 2. The institutional arrangements for conducting periodic future assessments of transboundary water systems. The current project, which runs from April 2013 to March 2015, builds on the previous phase during which assessment methodologies were developed for the five types of transboundary water systems. Oceans and seas are covered through the Large Marine Ecosystems and Open Ocean components both coordinated by the Intergovernmental Oceanographic Commission.</p> <p>Overfishing, habitat destruction, Climate change and pollution have been identified as the priority themes for oceans and seas. For each theme, a number of indicators and metrics are being used in the global baseline comparative assessment. Such an assessment requires datasets with global coverage, and is based on the best available data and information. Many of the datasets are at small spatial scales, which will allow data to be aggregated at different geographic scales. A partnership of about 20 institutions contribute to the TWAP Project. Spatial information and statistics from the TWAP LME and Open Ocean Web portal will be made available at the end of 2014..</p>

Statistical note 25:

Forests¹

Main policy issues, potential goals and targets

25.1 Forests are crucial for sustainable development and provide a range of benefits. Forests contribute to poverty alleviation by providing communities and households with livelihoods and access to resources such as firewood and non-wood forest products (e.g. fruits, wild game and medicinal plants) that contribute to food security.

25.2 Forests contribute to economic development and environmental sustainability. Commercial timber and non-timber products provide opportunities for employment and income. Forest ecosystem services are vital to a number of ecological functions including watershed protection, providing habitat for biodiversity and ecosystem integrity, and act as carbon sinks for the mitigation of climate change. Forests also provide cultural benefits to native and indigenous communities living in or surrounding forest areas, as well as scenic and cultural heritage benefits to all peoples.

25.3 The current Millennium Development Goals (MDG) indicators² relating to forests are:

7.1: Proportion of land area covered by forest.

7.2: CO₂ emissions, total, per capita and per \$1 GDP (PPP)

7.6: Proportion of terrestrial and marine areas protected.

7.7: Proportion of species threatened with extinction.

25.4 The current MDG framework uses a compartmentalized approach to environmental indicators that is the environmental information is not necessarily integrated with social or economic information. This is also apparent in information currently available internationally. The post-2015 agenda is aimed towards integrated environmental and socio-economic development where indicators monitor the intersection between development outcomes.³

25.5 Available forestry datasets address statistics and indicators that focus on traditional forestry issues (such as the area covered by forests, the type of forests and production and trade of forest products), with relatively comparable data available for most countries. There is potential for the currently available forest information to be expanded to include further data relating to environmental management practices and the social, economic and cultural domains.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, the Netherlands, United Kingdom, Eurostat, FAO and UNECE.

² UN Millennium Development Goals and Indicators- <http://mdgs.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm>

³ Statistics and Indicators for the Post-2015 Development Agenda, Indicators Overview- http://www.un.org/en/development/desa/policy/untaskteam_undf/Statistics%20and%20indicators_Overview.pdf

Conceptual and methodological tools

25.6 The System of Environmental-Economic Accounting (SEEA) Central Framework adopted as an international statistical standard by the United Nations Statistical Commission in 2012⁴ and the SEEA Experimental Ecosystem Accounting welcomed by the Statistical Commission as “an important first step in the development of a statistical framework for ecosystem accounting”⁵, represent important statistical frameworks to support the measurement of a wide range of indicators related to forests. They provide the conceptual framework for integrating the environmental and economic information systems. By organising environmental and economic information into an accounting framework there is the capacity to improve basic statistics, and develop indicators that are consistent, comparable and interlinked.⁶

25.7 The UN Framework for the Development of Environment Statistics (FDES 2013) and its Basic and Core Sets of Environment Statistics, adopted by the Statistical Commission as the framework for strengthening environment statistics programmes in countries, provide an organizing structure for statistics on the environmental, economic and social aspects of forests⁷.

25.8 Forest concepts, methodologies and statistics have a long tradition of development within the forestry/agricultural authorities with very little involvement of the national statistical offices. Historically forest data and terminology has focused on wood supply only. Information on the socio-economic and environmental aspects of forests has only been developed recently. This has resulted in concepts relating to forests being defined differently (i.e. according to the focus of the institution collecting the data), although international organizations and countries are increasingly using the internationally agreed definition of forest and related terminology from the longest running and most complete global forest data collection activity by the Food and Agriculture Organisation (FAO).

25.9 The Global Forest Resources Assessment (FRA) has been produced every 5-10 years by the FAO since 1946. The FRA is sent to countries (usually agricultural or forest authorities) who report information back to the FAO. The most recent dataset for 2010 includes 90 data items from 233 countries.⁸ The definition of forest in the FRA is used for the numerator of MDG indicator 7.1⁹ and by most international agencies working on forest statistics and indicators. The FRA also has data that covers forested land formally protected and some limited economic data. The FRA is conducted at 5-year intervals via a country survey with a standardised format in order to conciliate and reduce discrepancies between

⁴ Statistical Commission – Report on the forty-third session (28 February-2 March 2012)

⁵ Statistical Commission – Report on the forty-fourth session (26 February-1 March 2013) <http://unstats.un.org/unsd/statcom/doc13/2013-Report-E.pdf>

⁶ UNSD, SEEA- <http://unstats.un.org/unsd/envaccounting/seea.asp>

⁷ UNSD, FDES 2013 - <http://unstats.un.org/unsd/statcom/doc13/BG-FDES-Environment.pdf>

⁸ UN FAO, Global Forest Resources Assessment, 2010- <http://www.fao.org/forestry/fra/fra2010/en/>

⁹ UN Millennium Development Goals and Indicators, Metadata for Indicator 7.1 - <http://mdgs.un.org/unsd/mdg/Metadata.aspx>

country reporting.⁴ The current FRA could be used as a source of statistics to monitor a number of post-2015 goals, specifically those relating to forest cover change.

25.10 Inventories, surveys (of forest size, type and product) and remote sensing including satellite imaging are the predominant techniques currently used to collect primary forest-related data. Surveys can collect data on a range of forest topics; however consistent definitions and measurements are essential to inter-country comparability. Aerial photography and satellite imaging is used to measure vegetation cover, particularly in areas where other surveying is not available (e.g. remote regions). Whilst this improves forest coverage data, it is limited in that it does not measure other attributes and variables that are relevant in forest statistics. In the future, remote sensing technologies and methods have the potential to address some information needs, such as forest health and soil quality.

25.11 Remote sensing is a tool which can be used to assess forest cover and changes in forest cover. The Remote Sensing Survey (RSS) has been conducted for the first time in 2010 by the FAO. It aims to obtain globally consistent information on forest cover and land use change. The RSS is also used to verify information collected in the FRA and where necessary to complete information. Information from the RSS could also be used by countries to meet a number of other international reporting obligations for forests and sustainable development.¹⁰

Existing and new indicators

25.12 A range of forest indicators have been developed for the specific needs of particular regions or organisations (see Appendix).

25.13 Indicators currently available as part of the FRA relate to forest coverage, type and quality. There are also a limited number of forest economic indicators. Data on forest products (e.g. timber, and, with less reliability, non-wood forest products) are available from production statistics (volume and less frequently, value) for the majority of countries. UN COMTRADE is a source for trade data between countries (direction of trade). UNECE and FAO are good sources for country forest products trade statistics (without direction of trade).

25.14 Indicators on the area covered by forest and the production of forest products are important, but not sufficient to understand the environmental and social aspects associated with the economic activities. For example, the type of forest (natural, planted), its possible substitution from natural to planted forest and its quality measured by different parameters is important when assessing ecosystem, biodiversity and sustainability. The type of forest is usually reported to the FAO FRA by countries so this is available for most countries with forests.

¹⁰ UN FAO, Global Remote Sensing Survey- <http://www.fao.org/forestry/fra/remotesensingsurvey/en/>

25.15 With respect of forest management and certification, the Forest Stewardship Council (FSC) currently produce global statistics about the amount, area and type of certificates, regional distribution and by type of forest ownership¹¹. They are also currently working on a Generic International Indicators Framework.¹² The Ministerial Conference on the Protection of Forests in Europe (Forests Europe) has developed definitions as well as a number of criteria and indicators for Sustainable Forest Management (SFM).¹³ SFM is defined as “the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems”. SFM aims to address issues around deforestation and degradation and covers seven broad thematic areas: extent of forest resources; forest biological diversity; forest health and vitality; productive functions of forest resources; protective functions of forest resources; socio-economic functions of forest; and legal, policy and institutional framework. Social indicators that have not traditionally been monitored as part of forest statistics, such as cultural and recreational use, are addressed in SFM.

25.16 Most of the countries in the temperate and boreal zones (members of the Forest Europe and the Montreal Process) have developed/applied comprehensive monitoring /reporting systems.¹⁴ However, the data is available only for a limited number of indicators. Besides these two processes there are other ongoing regional “criteria and indicators” processes that developed a number of criteria and specific sets of indicators to monitor SFM. There is potential for the SFM to be used at a global level but it is not clear how long it would take national and international data collection mechanisms to populate the SFM.

25.17 The United Nations Forum on Forests (UNFF) adopted the landmark Non-Legally Binding Instrument on All Types of Forests on 28 April 2007, by which member States have agreed to an international instrument for sustainable forest management. The monitoring of the implementation of the Instrument for sustainable forest management and the subsequent data production also constitutes a data source upon which statistics and indicators can be constructed at the international level.

25.18 As a statistical framework, the SEEA Central Framework currently bridges the FRA definition of forests with national accounts concepts of forests. By combining a range of physical information on forests with other environmental and economic information, the SEEA could produce a wide range of indicators. The SEEA is based on the System of National Accounts being compiled by all countries to derive economic indicators. Although only a very limited number of countries compile environmental accounts on a regular basis,

¹¹ <https://ic.fsc.org/facts-figures.19.htm>

¹² <https://ic.fsc.org/international-generic-indicators.472.htm>

¹³ Ministerial Conference on the Protection of Forest in Europe, Sustainable Forest Management Criteria & Indicators-
http://www.foresteurope.org/sfm_criteria

¹⁴ UNECE/FAO/Forest Europe database (<http://w3.unece.org/pxweb/>)

the number is increasing as a result of the SEEA Central Framework's adoption as an international statistical standard and the implementation strategy that followed.

25.19 The SEEA Experimental Ecosystem Accounting takes the ecosystem perspective providing an accounting framework for the conditions of forest ecosystems and the services provided by these ecosystems, not only provisioning (e.g. timber and non-timber products) but also regulating (e.g. carbon sequestration, flood protection, habitat for biodiversity, etc.) and cultural services. The methodology to populate the SEEA Experimental Ecosystem Accounting is currently being tested in several countries, including the possibility of developing baseline indicators for 2015.

Data requirements, challenges and limitations

25.20 Current data sources are able to meet a variety of indicators relating to physical extent and types of forests and how they are used. The FRA is designed so that information between countries is consistent and comparable, and it remains the leading existing data source on forests despite the fact that the definitions are not always adhered to by countries. Developing countries with forests are the ones facing the most important challenges to measure and monitor key forest variables. This goes beyond the traditional forest coverage and production indicators. For instance, statistical systems need to be able to progressively produce information and statistics that are relevant to the livelihoods, cultural and ecological heritage of indigenous peoples living in and by the forests; and on the sustainability of development around their forests as ecological and cultural systems.

25.21 However, the FAO FRA focuses on traditional forestry data, with limited coverage on socio-economic data and on areas relating to development. New indicators and data sources are required to address a broader suite of forestry and livelihoods questions. Another challenge to consider is the availability of annual data, as FRA data are only produced every 5 years and the SDGs will need to report against targets annually. That will necessitate the development of sound methods to derive annual data from FRA or the use of other sources where the comparability and acceptance of these other sources have to be ensured..

Conclusions

25.22 The data currently available about forests is largely drawn from the FAO FRA and timber (forest product) statistics. The FRA provides statistics for a range of traditional indicators. They are well established and comparison between countries and over time can be made with confidence.

25.23 Various systems and frameworks have emerged and have the potential to monitor development issues around forests. Some frameworks, whilst established theoretically, are not yet used by large numbers of countries or have not been sufficiently developed to comprise all of the forests' complexity in interaction with the economic production and social and cultural aspects. The SEEA Central Framework and the SEEA Experimental Ecosystem

Accounting systems have the potential to monitor development issues related to forests and in particular would support SFM. These systems are in the process of being adopted and implemented in several countries. Because they take an integrated approach to environmental, economic and – partly – social issues, indicators drawn from these systems would provide the basis for improvement. International agencies working with countries to implement these information systems should in time see the emergence of data that can populate these frameworks. The potential should at least be recognised in the setting of new indicators post 2015.

Appendix: Table comparing existing forest indicators and sources

Organisation	Indicator / Data	Description	Sources
<u>Millennium Development Goals</u> 2000	7.1: Proportion of land area covered by forest 7.5: Proportion of total water resources used 7.6: Proportion of terrestrial and marine areas protected 7.7: Proportion of species threatened with extinction	7.1: The proportion of forest area to total land area and expressed as a percentage. 7.5: The proportion of total renewable water resources withdrawn. The total volume of groundwater and surface water withdrawn from their sources for human use (in the agricultural, municipal and industrial sectors), expressed as a percentage of the total actual renewable water resources. 7.6: The proportion of a country's terrestrial protected areas as well as marine protected areas in territorial waters (up to 12 nautical miles from the coast). 7.7: An index of the change in threat status of species in their natural habitat, based on population and range size and trends. The proportion of species expected to remain living in the near future in the absence of any conservation action.	7.1: FAO FRA 7.5: FAO AQUASTAT 7.6: UNEP-WCMC aggregates the global and regional figures for this indicator from the national figures calculated through GIS analysis 7.7: The proportion of species in each IUCN Red List Category, and changes in this proportion over time resulting from genuine improvement or deterioration in the status of individual species.
<u>Food and Agriculture Organisation of the United Nations – FRA</u> (5 yearly)	1. Vegetation coverage and type (proportion and volume) 2. Annual Change of forest cover (planted and primary) 3. Forest ownership 4. Forest designated function 5. Forest in protected areas 6. Growing stock 7. Carbon stock 8. Area affected by disturbances 9. Wood Products (type, volume, value) 10. Employment 11. Forest education	Comprehensive and comparable data for most countries. 1: Hectares and percentage of cover by forest, other wooded land and land with other tree cover 2. Hectares by year and percentage rate of change in forest cover 3. Percentage of forests owned by various types of institutions 4. Percentage of forests for specific primary functions (production, soil/water protection, biodiversity conservation, social services) 5. Hectares and percentage of forest in protected or permanent areas. 6. Type of forest and the volume of all living trees. 7. Carbon stock in living forest biomass (in tonnes) and annual change- both total and per hectare. 8. Hectares affected by fire, insects, disease and other factors. 9. Volumes of industrial roundwood and wood fuel removed and the value of removals in USD. 10. Full time equivalent jobs in forestry industry (production and protected area management). Gender split for public forest institution employment 11. Professionals employed in forest research and Number of graduates in forest-related study (by gender and level of qualification).	FAO Forest Resources Assessment FAO Remote Sensing Survey •annual data on production, import / export and consumption of forest products (FAOSTAT-Forestry and FAO Yearbook of Forest Products); •pulp and paper production capacities and recovered paper data surveys; and •every fifth year report on forest resource statistics (Forest Resources Assessment);
<u>World Bank</u> (annual)	1. Forest Area 2. Forest Rents 3. Terrestrial protected areas	1. Forest Area as a percentage of total area and in square kilometres. FAO definition of forest is used. 2. Forest rents are roundwood harvest times the product of average prices and a region-specific rental rate. Published as a percentage of GDP. 3. Terrestrial protected areas are totally or partially protected areas of at least 1,000 hectares that are designated by national authorities as scientific reserves with limited public access, national parks, natural monuments, nature reserves or wildlife sanctuaries, protected landscapes, and areas managed mainly for sustainable use.	1. FAO FRA 2. World Bank and FAO data sources, World Bank methodology. 3. UNEP-WCMC, compiled by the World Resources Institute, based on data from national authorities, national legislation and international agreements.
Criteria and Indicator Processes:	Criteria and specific indicators relating to Sustainable Forest Management (SFM) indicators	African Timber Organisation (ATO) Process Dry forests in Asia Process Dry-Zone Africa Process International Tropical Timber Organization (ITTO) Process Lepaterique Central American Process Montreal Process (see below) Near East Process	

		Pan-European Forest Process (Forest Europe, see below) Tarapoto Proposal (Amazon Forests)	
Montreal Process	7 criteria and 54 specific indicators relating to Sustainable Forest Management (SFM)	Indicators have been developed to address the following criteria on SFM topics: 1: Conservation of biological diversity 2: Maintenance of productive capacity of forest ecosystems 3: Maintenance of forest ecosystem health and vitality 4: Conservation and maintenance of soil and water resources 5: Maintenance of forest contribution to global carbon cycles 6: Maintenance and enhancement of long-term multiple socio-economic benefits 7: Legal, institutional and economic framework for forest conservation and sustainable management	As of 2012 the member countries are Argentina, Australia, Canada, Chile, China, Japan, South Korea, Mexico, New Zealand, Russia, United States and Uruguay. Together, they account for 90% of the world's temperate and boreal forests and 60% of all forests of the world. Periodic country reports.
<u>Forest Europe, UNECE and FAO</u> (4 yearly)	6 criteria and 52 specific indicators relating to Sustainable Forest Management (SFM)	Indicators have been developed to address the following criteria on SFM topics: 1: Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles 2: Maintenance of Forests Ecosystems Health and Vitality 3: Maintenance and Encouragement of Productive Functions of Forests (Wood and Non-Wood), 4: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems 5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably soil and water), 6: Maintenance of other socio-economic functions and conditions. The indicators also address the overall and thematic policies, institutions and instruments for sustainable forest management	Reporting from 46 countries of the pan-European region, coordinated by UNECE, FAO and Forest Europe through two questionnaires: one on quantitative indicators for Sustainable Forest Management, and the other on qualitative indicators for Sustainable Forest Management
<u>Eurostat</u> (annual)	Economic data on forestry and logging, including employment data. Sustainable forest management, comprising forest resources (assets) and environmental data.	1. Includes output, intermediate consumption, gross value added, fixed capital consumption, gross fixed capital formation and different measures of income of forestry and logging. 2. Includes forest area, wood volume, defoliation on sample plots, fires and areas with protective functions	1. Integrated environmental and economic accounting for forests (IEEAF) 2. Collected by FAO, UNECE, Forest Europe, the European Commission's departments for Environment and the Joint Research Centre

<p><u>Organisation for Economic Co-operation and Development</u> (annual)</p>	<ol style="list-style-type: none"> 1. Fellings 2. Natural Losses 3. Gross Increment 4. Net Change 5. Intensity of Use of Forest Resources 	<p>Information is only available for selected OECD countries.</p> <ol style="list-style-type: none"> 1. Both net fellings and volumes salvaged. Average annual standing volume of all trees, living or dead, measured overbark to a minimum diameter that are felled during the given reference period. Includes the volume of trees or part of trees that are not removed from the forest, other wooded land or other felling site. 2. Average annual losses to the growing stock during the given reference period, measured to a minimum diameter, due to mortality from causes other than cutting by man, e.g. natural mortality, diseases, insect attacks, fire, windthrow or other physical damage. 3. Average annual volume of increment over the reference period of all trees, measured to a minimum diameter. Includes the increment on trees which have been felled or die during the reference period. 4. Net change = Gross Increment - Net fellings - Natural losses 5. Actual fellings to annual productive capacity (i.e. gross increment). 	<p>OECD country survey. Definition and terminology can differ between countries.</p>
<p>ITTO/EUROSTAT/ FAO/UNECE (annual)</p>	<p>Production and trade in roundwood and wood products, including primary and secondary products.</p>	<p>The main types of primary forest products include: industrial roundwood, wood fuel, sawnwood, wood-based panels, pulp, and paper and paperboard. Secondary products include further processed wood and paper products.</p>	<p>Joint Forest Sector Questionnaire</p>

Statistical note 26:

Biodiversity¹

Main policy issues, potential goals and targets

26.1 Biodiversity is defined as the variability among genes, species and ecosystems. Ecosystems are defined as ‘a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit’.²

26.2 Biodiversity benefits people through its contribution to material welfare and livelihoods as well as security, resilience, social relations, health, and freedom of choices and actions.³ A large number of the world’s poor rely directly on biodiversity and ecosystem services, and it is their livelihoods that would be affected first and foremost by biodiversity loss. Moreover, biodiversity loss would negatively impact the provision of ecosystem services, especially those related to food production, nutrition, water purification and cycling and the recycling and decomposition of waste and pollution, seriously affecting a vastly broader share of the human population. Biodiversity loss is also likely to impact on the carbon sequestration capacity of ecosystems. The most important direct drivers of biodiversity loss are habitat loss, land use change, the physical modification or pollution of waterways and marine ecosystems, invasive alien species overexploitation and climate change.²

26.3 There is widespread consensus that in the post-2015 UN development agenda, biodiversity needs to be more integrated into broader development objectives. At the Rio+20 Conference, countries stressed the inter-relations between biodiversity, including its genetic level, ecosystem services and food security, as well as the critical role of biodiversity and ecosystems in sustainable development, human well-being and poverty reduction.

26.4 Parties under the Convention on Biological Diversity (CBD) established in 2010 the Strategic Plan for Biodiversity 2011-2020 and a framework of targets named the Aichi Biodiversity Targets.⁴ With the declaration of the UN Decade on Biodiversity, both the Strategic Plan for Biodiversity 2011–2020 and the Aichi Biodiversity Targets have been recognized as the UN-wide framework for addressing issues related to biodiversity at the ecosystem, species and genetic levels.⁵ Specific indicators for these targets are being developed by the Biodiversity Indicators Partnership (BIP) initiative. The BIP is ‘a global initiative to promote and coordinate development and delivery of biodiversity indicators in

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, United Kingdom, FAO, Eurostat, UNEP and UNESCO.

² Convention on Biological Diversity, 2003 <http://www.cbd.int/convention/articles/default.shtml?a=cbd-02>

³ Millennium Ecosystem Assessment – Biodiversity Synthesis. World Resources Institute, Washington, DC. <http://www.unep.org/maweb/documents/document.354.aspx.pdf>.

⁴ COP 10 Decision X/2.

⁵ United Nations General Assembly Resolution A/RES/65/161.

support of the CBD, Multilateral Environmental Agreements (MEA), national and regional governmental and nongovernmental organizations and a range of other sectors'.⁶ The BIP coordinates over 40 organizations working internationally on indicator development in order to provide comprehensive information on biodiversity for UN organizations and affiliated groups.

Conceptual and methodological tools

26.5 The BIP utilizes a range of methods to collect and compile the data needed to measure progress against targets identified in the Strategic Plan for Biodiversity 2011-2020 and the 20 Aichi Biodiversity Targets. A range of concepts and methodologies are used that are outlined in the supporting documentation.

26.6 As far as statistical frameworks are concerned, the System of Environmental-Economic Accounting (SEEA) Central Framework adopted as international statistical standard by the United Nations Statistical Commission in 2012⁷ and the SEEA Experimental Ecosystem Accounting welcomed by the Statistical Commission as “an important first step in the development of a statistical framework for ecosystem accounting”⁸, represent important statistical frameworks to support the measurement of a wide range on indicators including many BIP indicators and to integrate biodiversity with social and economic data. Efforts are under way to align the BIP indicators with SEEA definitions and classifications.

26.7 The Framework for the Development of Environment Statistics and its Basic and Core Sets of Environment Statistics, adopted by the Statistical Commission as the framework to strengthen environment statistics programmes in countries provide an organizational structure and a minimum set of statistics to measure biodiversity⁹.

26.8 The FDES and the SEEA do not propose any indicators, but the use of the SEEA-EEA would enable biodiversity measures to be compared with a range of environmental and economic data. What these might be would need to be the focus of a dialogue between biodiversity specialists and environmental accountants, among others. Dialogue is underway to bring together the two communities.

⁶ <http://www.bipindicators.net/about>

⁷ Statistical Commission – Report on the forty-third session (28 February-2 March 2012)

⁸ Statistical Commission – Report on the forty-fourth session (26 February-1 March 2013) <http://unstats.un.org/unsd/statcom/doc13/2013-Report-E.pdf>

⁹ <http://unstats.un.org/unsd/statcom/doc13/BG-FDES-Environment.pdf>

Existing and new indicators

26.9 The relevant MDG is Goal 7 “Ensure environmental sustainability”. Within MDG Target 7.B: “Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss” there are the following indicators that provide proxy measurements:

7.6 Proportion of terrestrial and marine areas protected

7.7 Proportion of species threatened with extinction

Other MDG indicators related to biodiversity are:

7.1 Proportion of land area covered by forest.

7.4 Proportion of fish stocks within safe biological limits.

26.10 The BIP was established after the development of the MDGs and associated indicators. Most of the proposed indicators in BIP are now operational to some extent. The biodiversity indicators developed and brought together by the BIP are the primary mechanism for monitoring progress towards the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets (See Annex). In the first instance 17 of the 20 Aichi targets are covered by at least one of the BIP indicators. In the coming years the Partnership will endeavor to fill gaps and expand its set of indicators to ensure that a comprehensive framework of global indicators is available to monitor progress towards the suite of Aichi Biodiversity Targets. The existing set of indicators needs to be further improved both to assess the state of biodiversity and to measure the level of implementation of programmes and actions carried out by countries and other stakeholders.

Data requirements, challenges and limitations

26.11 The different BIP partner organizations currently provides data on 17 of the 20 Aichi Biodiversity Targets. The BIP aims to have complete coverage of all 20 targets. The timing of this will also depend upon future commitment from partnerships and funding.

26.12 The take-up of BIP indicators varies by country according to the indicator in question. Indicators derived from satellite imagery (such as for the ‘nitrogen deposition’ indicator) provide global coverage. For other indicators, coverage is restricted to a handful of countries (such as for the ‘area of agricultural systems under sustainable management’ indicator).

26.13 Likewise, the availability as well as temporal and spatial extent of data varies according to the indicator. This ranges from total coverage of spatial extent and full availability (for example, again from satellite imagery) through to more limited spatial coverage, extent and restricted availability (for example, measuring trends from scientific bird surveys for North America and Europe only). For most of the indicators, there are many countries with several years of data and good spatial coverage.

26.14 As with any dataset, there are statistical limitations and the data within the BIP is no exception. The data is supplied by international organizations who obtain information from (short-term) projects, universities, NGOs and national sources. For most indicators the data

can usually be disaggregated. Information on data quality and measures of uncertainty is available and a preliminary inspection indicates the data are fit-for-purpose (i.e. measure broad scale trends).

26.15 The issue of data quality and its description are perhaps best illustrated by example. There are the identified sources of uncertainty associated with the IUCN Red List Index values and trends.¹⁰ Briefly, the Red List Index contains uncertainties associated with:

- (i) inadequate, incomplete or inaccurate knowledge of a species' status;
- (ii) delays in the knowledge about a species becoming available for assessment;
- (iii) inconsistency between species assessments; and
- (iv) species that are too poorly known for Red List Criteria to be applied are assigned to the Data Deficient category and excluded from the calculation of the Red List Index.

26.16 The main limitations outlined for the IUCN Red List Index relates to the relatively broad measures of status and available resources to allow the Index to be updated once every four years; that it only captures one aspect of biodiversity; and that it doesn't capture the potentially deteriorating status of common species. The Red List, in fact mainly focuses on wild species and puts less emphasis on species used by humans, for instance for food and agriculture, nor does it capture the genetic status of species which is of great importance.

26.17 Some data sources support a range of biodiversity indicators. These include data provided by UN-affiliated organizations, such as IOC-UNESCO (OBIS), UNEP (WCMC) and FAO; by IUCN-affiliated organizations and by the Red List; WWF; BirdLife International and universities. For a more developed list of data sources which contributed to the biodiversity indicators coordinated by the BIP, please refer to the BIP website.¹¹

26.18 The SEEA-CF and the SEEA-EEA have the potential to provide a broader set of indicators showing how the status of biodiversity affects the social and economic systems as well as the reverse (how social and economic systems affect biodiversity). The possibility of developing a global baseline for a few biodiversity indicators is currently being explored.

Conclusions

26.19 The BIP is a CBD-mandated organization for addressing the Aichi Biodiversity Targets. It brings together over forty relevant, international organizations working on various aspects of biodiversity. Given the data sources provided for each indicator, along with information on uncertainties, the BIP indicators appear to be as robust as possible. It should

¹⁰ Indicators for Monitoring the MDG – definitions, rationale, concepts and sources – 7.7 Proportion of species threatened with extinction. <http://mdgs.un.org/unsd/mi/wiki/7-7-Proportion-of-species-threatened-with-extinction.ashx>

¹¹ BIP Indicators <http://www.bipindicators.net/indicators>.

be noted that the BIP does not exert influence over the data that it collects, or dictate the methodology used by contributing organizations.

26.20 While the BIP partners are currently the best sources of information on biodiversity there is little integration of biodiversity with economic data. The SEEA provides a way forward in this regard. In particular the development of a baseline for biodiversity for 2015 based on modeling combined with data collected by countries provides a promising approach for globally comparable measures of biodiversity across countries to monitor ecosystem trends and condition.

26.21 Data for monitoring progress towards the Aichi Biodiversity Targets need to be collected from several different sectors and contexts. Despite the large amount of data available at the national level and from international organizations, data are still insufficient, often not comparable, lacking in quantity and quality and are rarely geo-referenced.

Appendix: Table comparing existing biodiversity indicators and sources

	Description		Data sources
Aichi Biodiversity Targets	Targets	Indicators	
Strategic Goal A: Addressing the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	<p>Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.</p> <p>Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.</p> <p>Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.</p> <p>Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.</p>	<ol style="list-style-type: none"> 1. Biodiversity Barometer 2. Ecological Footprint 3. Status of species in trade 4. Wild Commodities Index 	<ol style="list-style-type: none"> 1. Union for Ethical Biotrade 2. The Global Footprint Network 3. CITES/IUCN 4. UNEP-WCMC/SSC; Traffic, WWF, ZSL
Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use	<p>Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.</p> <p>Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.</p> <p>Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.</p> <p>Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.</p> <p>Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.</p> <p>Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.</p>	<ol style="list-style-type: none"> 1. Red List Index 2. Extent of forests and forest types 3. Extent of marine habitats 4. Living Planet Index 5. Wild Bird Index 6. Area of forest under sustainable management: degradation and deforestation 7. Forest fragmentation 8. River fragmentation and flow regulation 9. Wildlife Picture Index 10. Wild Commodities Index 11. Marine trophic Index 12. Proportion of fish stocks in safe biological limits 13. Number of MCS certified fisheries 14. Area of forest under sustainable management: certification 15. Area of agricultural systems under sustainable management 16. Water Quality Index for biodiversity 17. Nitrogen deposition 18. Loss of reactive nitrogen to the environment 19. Trends in invasive alien species 20. Ocean Health Index 21. Cumulative human impacts on marine ecosystems 	<ol style="list-style-type: none"> 1. IUCN Red List 2. FAO 3. FAO/scientific data 4. WWF/ZSL 5. BirdLife International/RSPB 6. FAO 7. (In development – UNEP-WCMC) 8. TNC/ Umea University 9. TEAM network 10. UNEP-WCMC/SSC; Traffic, WWF, ZSL 11. Sea Around Us Project 12. FAO 13. MSC 14. FSC 15. FAO 16. GEMS Water 17. INI 18. INI/Nitrogen Footprint 19. BirdLife International/ IUCN/ISSG/ Monash University 20. NCEAS/ CMAP 21. NCEAS/ CMAP
Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity	<p>Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.</p> <p>Target 12: By 2020 the extinction of known threatened species</p>	<ol style="list-style-type: none"> 1. Management effectiveness of protected areas 2. Coverage of protected areas 3. Protected area overlays with biodiversity 4. Red List Index 5. Living Planet Index 6. Wild Bird Index 	<ol style="list-style-type: none"> 1. UNEP-WCMC/University of Qld 2. UNEP-WCMC 3. UNEP-WCMC and IOC-UNESCO (OBIS) 4. IUCN Red List 5. WWF/ZSL

	has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained. Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	7.Wildlife Picture Index 8.Ex-situ crop collections 9.Genetic diversity of terrestrial domesticated animals 10. Global Marine Species Composition Trend Index 11. Global maps on Status of Knowledge on Marine Biodiversity	6.BirdLife International/RSPB 7.TEAM network 8.FAO 9.FAO 10. IOC-UNESCO (OBIS) in development 11. IOC-UNESCO (OBIS) in development
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services	Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable. Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification. Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	1.Red List Index 2.Biodiversity for food and medicine 3.Health and wellbeing of communities directly dependent on ecosystem goods and services 4.Nutrition indicators for biodiversity 5.Ratification status of the Nagoya Protocol	1. IUCN Red List 2.Traffic 3. UNEP-WCMC 4.FAO 5.CBD
Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building	Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan. Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels. Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied. Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the SP for B 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels.	1.Status of NBSAPS 2.Status and trends of linguistic diversity and numbers of speakers of indigenous languages 3.Index of Linguistic Diversity 4.VITEK 5.Number of maintained species inventories being used to implement the CBD 6.Official development assistance in support of the Convention 7. National and Open Ocean reporting tools on Marine Biodiversity	1.CBD 2.(In development – UNESCO) 3.Terralingua 4.(In development – Terralingua) 5.(In development) 6.UNEP-WCMC/OECD 7. IOC-UNESCO (OBIS)
MDG	Targets	Indicators	
Goal 7: Ensure environmental sustainability	Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss	7.1 Proportion of land area covered forest 7.2 CO2 emissions, total, per capita and per \$1 GDP (PPP) 7.3 Consumption of ozone-depleting substances 7.4 Proportion of fish stocks within safe biological limits 7.5 Proportion of total water resources used 7.6 Proportion of terrestrial and marine areas protected 7.7 Proportion of species threatened with extinction	7.1 FAO 7.2 UNFCC/CDIAC 7.3 UNEP 7.4 FAO 7.5 FAO/UN Water 7.6 UNEP-WCMC 7.7 UNEP-WCMC
	Target 7.C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	7.8 Proportion of population using an improved drinking water source 7.9 Proportion of population using an improved sanitation facility	7.8 UNICEF/WHO 7.9 UNICEF/WHO
	Target 7.D: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	7.10 Proportion of urban population living in slums	7.10 UN-HABITAT

Statistical note 27:

Promoting Equality, including Social Equity¹

Main policy issues, potential goals and targets

27.1 The issue of “*addressing inequalities*” in the Post-2015 development agenda has been widely acknowledged as being of critical importance by a variety of stakeholders, ranging from governments to civil society, to the UN system and beyond. In the Millennium Declaration adopted by UN Member States in 2000, world leaders acknowledged their responsibilities to “uphold the principles of human dignity, equality and equity²” for all of the world's people. In practice, however, the Millennium Development Goals (MDGs) that emanated from the Millennium Declaration focused more on global and national averages and aggregate progress without addressing inequalities explicitly, both within and between countries. It is essential that the new framework explicitly goes beyond global and national averages and aggregate progress, by disaggregation that measures the different levels of achievement of different social groups and highlights who is being left behind. Incorporating targets to ensure progress for all social groups and reduce the differences in achievement, i.e. the inequalities, will also be essential to ensure that action is taken to improve the situation of all groups. In existing proposals and suggestions so far, including in a number of the major reports³ on Post-2015 development agenda, this issue of addressing inequalities is always referenced in some form, although there are some differences in the framing.⁴ For example, gender equality is often expressed as stand-alone “headline” goal, while other forms of inequalities, social exclusion and discrimination are sometimes expressed as separate headline goals and/or are mainstreamed throughout all of the goals.

27.2 A mix of a) global aspirational goals, with b) regionally, nationally or sub-nationally set and contextualized targets, and c) a common core set of global indicators, with additional nationally-contextualized ones, might be a way to better address unique issues of different states/regions and put greater focus on the collection and analysis of data at the subnational

¹ The following organizations and countries contributed to the drafting and review of this statistical note: Australia, Botswana, the Netherlands, Italy, United Kingdom, United States of America, Eurostat, OECD, OHCHR, UNDP, UNECE, UNICEF, and UNWoman. Please consult other statistical notes which have been produced separately on relevant topics such as gender equality and women's empowerment, and human rights including the right to development.

² UN General Assembly Resolution 55/2: United Nations Millennium Declaration. <http://www.un.org/millennium/declaration/ares552e.htm>

³ A New Global Partnership: Eradicate Poverty and Transform Economies Through Sustainable Development: The Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda. http://www.un.org/sg/management/pdf/HLP_P2015_Report.pdf; A life of dignity for all: accelerating progress towards the Millennium Development Goals and advancing the United Nations development agenda beyond 2015: Report of the Secretary-General.

<http://www.un.org/millenniumgoals/pdf/A%20Life%20of%20Dignity%20for%20All.pdf>; Sustainable Development Solutions Network: An Action Agenda for Sustainable Development. <http://unsdsn.org/files/2013/11/An-Action-Agenda-for-Sustainable-Development.pdf>; Global Thematic Consultation on the Post-2015 Development Agenda: Addressing Inequalities: Synthesis Report of Global Public Consultation. <http://www.worldwewant2015.org/node/299198>.

⁴ The calls for universal or “zero-based” targets; leaving no one behind; increased capacity in data collection and disaggregation of data and that “targets will only be considered ‘achieved’ if they are met for all relevant income and social groups” all speak to the need for robustly and boldly addressing and monitoring major inequalities and their structural causes in the next development framework.

level where disparities and inequalities within countries become more apparent.⁵ Additionally, the use of intermediate targets specially aimed to reduce inequalities has been proposed.⁶ These could include targets to specify required rates of progress among nationally-identified deprived population groups, and/or targets to specify the extent to which gaps between groups or locations should be reduced.⁷

27.3 There are multiple options for setting targets under each goal to reduce the inequalities between groups. One option would be to set universal or ‘zero’ targets which should be met for all groups by a particular date (e.g. 2030 or possibly a later date if this is not realistic).⁸ Also, setting interim progress targets (e.g. 2015, 2020, 2025 for different groups) or monitoring the adequacy of rates of progress towards the universal target for each group over time would ensure that progress is on track, no one is left behind, and ensure that inequalities are progressively and systematically reduced over time. Special attention would need to be paid to the most disadvantaged groups, as faster progress would be necessary in order to catch up to reach the national target.

Conceptual and methodological tools

27.4 Local data collection and monitoring as well as the capacity to disaggregate data are crucial elements in being able to understand where progress is unequal. All indicators should be disaggregated by different social groups as far as possible, at a minimum in relation to sex, age, disability status, location (e.g. rural-urban/remote areas/slum locations) and income/wealth as well as for the most disadvantaged groups in each country context (e.g. caste, indigenous peoples, migrants, minorities), identified through a consultative and participatory national process and in accordance with related human rights, ethical and statistical standards.

27.5 From a statistical perspective, it is therefore important to consider 1) the stratification variables for disaggregation⁹ and 2) particular indicators that reflect inequality issues not captured by disaggregation under other goals (e.g. Gini coefficient and relative poverty for income inequality or measures to reflect multidimensional poverty, or gender equality measures, etc.). It will be important to consider both vertical and horizontal inequalities

⁵ One possible methodology for setting contextualised targets relevant to each country’s level of development/different levels of resources might be to adapt the “Achievement Possibilities Frontier” approach. See Fukuda-Parr, Sakiko, Terra Lawson-Remer, and Susan Randolph, SERF Index Methodology: Version 2011.1, Technical Note <http://www.serfindex.org/data/>

⁶ Watkins, K (2013); Inequalities as a barrier to human development. Overseas Development Institute, UK.

⁷ Anderson, E (2013). Inequality Measurement and Options for the Post-2015 Development Agenda. Commissioned by the Office of the High Commissioner for Human Rights (OHCHR)

⁸ Reference to “zero targets” would not make sense for “relative” (rather than “absolute”) poverty thresholds, used in many developed countries. These targets would then only be relevant for developing countries.

⁹ On the issue of the most appropriate “stratification variables”, sex and age are uncontroversial. However, “disability, location, income/wealth”, are variables where statistical problems are much more important. For example, while the Canberra 2011 *Handbook on Household Income Statistics* provides international guidance on how to measure household income in surveys, this cannot be easily implemented in surveys whose primary purpose is to measure aspects other than income. Similarly the notion of cross-classifying respondents by their wealth holdings seems almost impossible to implement (there are no international standards on how to measure wealth; and the guidance that exists – the OECD *Guidelines for Micro-Statistics on Household Wealth*— cannot be implemented in non-wealth surveys.

within countries as well as possible measures of global or international inequality to capture inequalities between countries.

Existing and new indicators

27.6 Because inequalities cut across all dimensions of development, there has been much discussion on whether there should be a stand-alone goal (or goals) on equality, whether addressing inequalities should be mainstreamed across all goals, targets and indicators, or a combination of both.

27.7 In the current MDG framework, there are some already-established goals, targets and indicators with respect to gender equality, among others, on primary, secondary and tertiary education, seats in national parliaments and in wage employment in the non-agricultural sector. For the Post-2015 development agenda, there are proposals for additional targets and indicators around gender equality including on violence against women and girls.¹⁰

27.8 There have also been discussions around a goal and/or targets and indicators with respect to income inequality. The current MDG framework includes an indicator on the share of poorest quintile in national consumption. National household income and expenditure surveys are the main source of data on income inequality and income poverty. Over the past two decades, there have been significant improvements in the quality, consistency and frequency of those surveys. Efforts led by international organizations such as the World Bank have improved the availability of data on indicators such as the Gini Index of income distribution and poverty headcount ratios¹¹. Looking forward, some noted economists and academics¹² have called for the use of the “Palma Ratio” which compares the income share of the top 10 per cent of a population to the bottom 40 per cent. It has been argued that the Palma Ratio would give a more precise and accessible view of income inequality. Also, the polarisation of the social data (mainly income data) in the distribution around two modes (at both ends of the spectrum, with a decreasing 'middle class' in between) is an important issue.

27.9 A further challenge for the new development agenda is how to accurately measure the multi-dimensional nature of poverty, beyond income. Proposals on this include indices that track multiple deprivations¹³ or having “minimum floor” or “relative gain” indicators based on wealth quintile or location.¹⁴ It would also be important to examine the accumulation of 'abundance' (at the other end of the distribution).

¹⁰ See OWG Statistical Note on Gender Equality and women’s empowerment.

¹¹ Please also consult the statistical note on Poverty for an overview of the methodology used in calculating poverty estimates at the global and national levels and differences in methods used in developed countries.

¹² Open letter to the Secretary-General’s Post-2015 High-level Panel: <http://post2015.files.wordpress.com/2013/03/inequality-letter-final-190313.pdf>

¹³ Alkire, S. and Sumner, A. “Multidimensional Poverty and the Post-2015 MDGs,” Oxford Poverty and Human Development Initiative; <http://www.ophi.org.uk/wp-content/uploads/MPI-post-2015-MDGs-FINAL.pdf>

¹⁴ Measurement and Assessment of Inequalities: Expert Online Discussion Synopsis: <http://www.worldwewant2015.org/node/307840>

27.10 In the discussions on Post-2015 development goals, *inequality of opportunity* has been discussed along with *inequalities of outcomes*, yet there are no agreed upon measures. The World Bank's 'Human Opportunity Index'¹⁵ pulls together in a single composite indicator both how many opportunities (e.g. overall access to primary education, clean water etc.) are available in a given country or region, and how equitably those opportunities are distributed between rich and poor. UNDP has also developed an inequality-adjusted Human Development Index. Composite indices would provide summary measures, but may not be essential if data on inequalities in opportunities in access to education, clean water, etc., is provided under each goal, if all indicators are disaggregated.

Data requirements, challenges and limitations

27.11 A combination of quantitative and qualitative data¹⁶ is essential in order to gain a more complete understanding of existing inequalities at international, national and sub-national levels and the barriers they pose to poverty elimination and human progress. The availability of household survey data has steadily increased over the last several years, including through technical support from specialized UN agencies.¹⁷

27.12 Disaggregating the data under each goal would also help to strengthen the analysis of social inequalities. Disaggregation of data for under-five mortality, nutrition, school enrolment and basic services access by location, household wealth and sex and age (as relevant) is widely possible and needed. However, it is also important to extend the variables for disaggregation, to allow disaggregation by disability status, ethnicity, race and others, which will go beyond existing available data.

27.13 Monitoring progress in the reduction of disparities will require an enormous amount of data in order to allow disaggregation at very different levels and groups as desired. The ambition to mainstream inequalities throughout all post-2105/SDGs (while desirable in principle) cannot be achieved through existing official statistics. Therefore, as a long term investment, it will be important to think of the improvement of current as well as other data sources, including administrative records and civil registration.

27.14 Additionally, with the advent of modern technologies, more opportunities exist for community-led, local and real-time monitoring (e.g. SMS-based surveys and data collection, crowd sourcing, big data analytics and participatory research methods such as focus-group discussions¹⁸). These monitoring modes should serve as a complement to data collected through household surveys and can provide an additional, deeper understanding of

¹⁵ De Barros, Ricardo Paes. Measuring inequality of opportunities in Latin America and the Caribbean. World Bank Publications, 2009.

¹⁶ The Statistics and Living Conditions (EU-SILC) is the most important source for monitoring social inequalities in the EU:

http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/legislation

¹⁷ Data collection through UNICEF-supported Multiple Indicator Cluster Surveys (MICS) and USAID-supported Demographic and Health Surveys (DHS) are, for example, now the primary source of disaggregated data (e.g. by wealth quintile, ethnicity, sex, area of residence, etc.) on the majority of MDG indicators.

¹⁸ <http://www.participate2015.org/>

inequalities, deprivations, bottlenecks and barriers to addressing inequalities such as exclusion, stigma and discrimination that are often difficult to track. Such approaches can increase ownership of the new agenda among communities; provide clearer channels for accountability and feedback; and provide more rapid understanding on a particular issue.

27.15 A combination of higher and lower-tech local monitoring initiatives, alongside improved capacity for data collection and analysis through institutional systems and household surveys, is needed to better understand the true barriers and bottlenecks to development progress, to inform decision-makers and to empower individuals and community groups to hold public servants and other duty bearers more closely to account.¹⁹

Conclusions

27.16 In order to be able to effectively monitor progress towards the reduction of inequalities in all the different aspects, it is clear that the amount of data needed is much larger than the currently exist and major data investments in data systems will be essential at the global and national levels. More sustainable options should be promoted and improved at the national level, such as the use of administrative records including civil registration. Exploring the use of other non-official sources will be also important to complement those produced with the limited capacity of the statistical systems.

27.17 Looking ahead, significant international efforts are needed to improve the availability of disaggregated data at different levels to allow the meaningful monitoring in progress of some disadvantaged groups. In addition, methodological developments are needed to be able to analyse inequalities which have been neglected, such as those related to ethnicity, aging, urban poverty and children without family care.

¹⁹ Morgan, R. and O'Shea, S.(2012) Locally-led monitoring as an engine for a more dynamic and accountable post 2015 development agenda <http://www.unicef-irc.org/research-watch/Post-2015--What-Next-/903/>

Statistical note 28:

Gender Equality and Women's Empowerment¹

Main policy issues, potential goals and targets

28.1 Gender inequality is the most pervasive form of inequality around the world and a pressing human rights concern. Recent decades have seen gains in some areas, such as in girls' enrolment in education. However progress has been uneven across the different world regions and between different groups within countries, with gender inequalities persisting and even growing along several dimensions, such as in employment in selected regions since the 2008 crisis.²

28.2 A critical aspect of promoting gender equality is the empowerment of women, with a focus on identifying and redressing power imbalances and giving women more autonomy to manage their own lives. Women's empowerment is vital to sustainable development and the realization of human rights for all.

28.3 Many groups, including the High-Level Panel of Eminent Persons,³ have proposed a stand-alone gender equality goal in the future framework to galvanize resources and political will, and to serve as an accountability mechanism to monitor progress and address the remaining gaps in implementation. Several proposals emphasize that any future goal must be comprehensive and transform gender relations by tackling the structural underpinnings of gender inequalities. Based on these proposals, the TST Issues Brief on Gender Equality and Women's Empowerment has highlighted the following areas:

- Freedom from violence against women and girls;
- Equality in human capabilities, access to opportunities and resources; and
- Equality in agency, voice and participation across the full range of decision-making arenas.

28.4 As stated in the report, *Statistics and Indicators for the Post-2015 Development Agenda*, depending on the content of the new framework, some targets and indicators under these three areas can be included in a stand-alone goal while others can be mainstreamed into other goals.⁴

¹The following countries and organizations contributed to the drafting and review of this statistical note: Germany, Italy, the Netherlands, United Kingdom, France, United States of America, Botswana, Australia, Eurostat, UNECE, OECD and UNWomen. Please consult other statistical notes which have been produced separately on relevant topics such as human rights including the right to development.

²TST Issues Brief: Gender Equality and Women's Empowerment

http://sustainabledevelopment.un.org/content/documents/2396TST%20Issues%20Brief%20GEWE_FINAL.pdf

³United Nations. 2013. *A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development*. The Report of the High Level panel of Eminent Persons on the Post-2015 Development Agenda. New York: United Nations. (pp. 7.)

<http://www.post2015hlp.org/wp-content/uploads/2013/05/UN-Report.pdf>

⁴United Nations. 2013. *UN System Task Team on the Post-2015 UN Development Agenda: Statistics and Indicators for the post-2015 development agenda*. New York: United Nations. pp. 27-28.

28.5 With regard to targets, the Task Team on Lessons Learned from MDG Monitoring of the Inter-Agency and Expert Group on MDGs (IAEG-MDGs), in its report “*Lessons Learned from MDG Monitoring from a Statistical Perspective*”, identified nine criteria for setting targets. Key to setting realistic targets on gender equality and women’s rights is the existence of adequate baseline statistics to provide benchmarks for measuring progress.

Conceptual and methodological tools

28.6 Substantive work on gender statistics was initiated in 1980s, following the proclamation of the United Nations Decade for Women: Equality, Development and Peace (1976-1985). Since then, to improve the production of gender statistics, many international, supranational and regional agencies have issued methodological publications which aimed at providing practical guidance to countries on statistical concepts and methods, training of users and producers of gender statistics, and database development and statistical reporting.

28.7 Most recently, at its forty-fourth session in February 2013, the UN Statistical Commission (UNSC) endorsed the minimum set of gender indicators.⁵ As it will be discussed in the section that follows, the Inter-Agency and Expert Group on Gender Statistics (IAEG-GS) developed the list of indicators, intended as a common basic set across countries and regions, for national production and international compilation of gender statistics. The IAEG-GS, through its Advisory Group on Emerging Issues, is currently working to develop tools and to promote data production for selected indicators of the minimum set, including work on time use and violence against women statistics.

28.8 Important methodological work is also underway on selected gender indicators for which internationally agreed concepts and comparable data are not currently available. An example of such work is the Evidence and Data for Gender Equality (EDGE) project implemented by the UN Statistics Division and UN-Women, in collaboration with the World Bank, OECD, FAO, Asian Development Bank and African Development Bank, whose aim is to develop and test methodologies to measure asset ownership and entrepreneurship from a gender perspective by 2016.

Existing and new indicators

28.9 While the MDGs--MDG 3 and 5 in particular, have been successful in drawing attention to gender equality issues, several critical dimensions of gender inequality, particularly some key structural barriers, were not covered by the MDGs.⁶

⁵United Nations. 2013. *Statistical Commission: Report on the forty-fourth session*. E/CN.3/2013/33. <http://unstats.un.org/unsd/statcom/doc13/2013-Report-E.pdf>

⁶TST Issues Brief: Gender Equality and Women’s Empowerment (http://sustainabledevelopment.un.org/content/documents/2396TST%20Issues%20Brief%20GEWE_FINAL.pdf)

28.10 In February 2013, following the recommendations of the UNSC, the IAEG-GS⁷ identified a minimum set of 52 gender indicators covering the following areas: (1) economic structures, participation in productive activities and access to resources; (2) education; (3) health and related services; (4) public life and decision-making; and (5) human rights of women and the girl children.⁸ The choice of indicators included in the minimum set was guided by the primary policy concerns addressed in the Beijing Platform for Action and other more recent international commitments, including the MDGs.⁹

28.11 In addition, the set of indicators are classified into the following three tiers: Tier 1 indicators which are conceptually clear, with an agreed international definition and regularly produced by countries; Tier 2 indicators which are conceptually clear, with an agreed international definition, but not yet regularly produced by countries; and Tier 3 indicators for which international standards need still to be developed and not regularly produced by countries. For many of the indicators of the minimum set, adequate baselines generally exist and targets that take into account past achievements can be set. Because of their solid technical foundation and wide international acceptance, the minimum set of gender indicators provides a strong basis for monitoring gender equality and women's rights¹⁰.

Data requirements, limitations and challenges

28.12 While the minimum set, as noted above, provides a good basis for monitoring the advancement of gender equality and women's empowerment, it should also be noted that nearly a third of its indicators still suffer from significant statistical gaps in terms of international comparability and/or data availability. Furthermore, the minimum set does not address all issues related to gender equality and women's rights. For example, because income and consumption data are collected at the household level, headline income poverty data do not address gendered poverty and the unequal intra-household distribution of power and resources. Therefore, in some cases, further efforts are needed to develop new methods to measure important areas of gender equality and women's empowerment and additional indicators that are not addressed in the minimum set may be needed.

28.13 A key consideration is the statistical capacity needed at national, regional and global levels to adequately produce gender statistics for monitoring. One of the key challenges to

⁷ IAEG-GS is composed of national and international experts on gender statistics (around 40 members) and is in charge of coordinating the Global Gender Statistics Programme (UN Statistical Commission-decision 42/102)

⁸ United Nations. 2013. *Report of the Secretary-General on Gender Statistics*, prepared for the Forty-fourth session of the Statistical Commission. E/CN.3/2013/10. <http://unstats.un.org/unsd/statcom/doc13/2013-10-GenderStats-E.pdf>

⁹ The global minimum set of indicators is used as the basis for regional monitoring frameworks. The Conference of European Statisticians has developed a set of 47 headline and 76 supporting indicators attempting to cover all policy areas relevant to gender equality. The indicators build on and are consistent with the global minimum set and are attuned to the specific needs for monitoring gender equality in Europe and developed countries elsewhere.

Also, since 1999, the Council of the European Union has adopted 75 gender indicators in 11 out of 12 critical areas of concern of the Beijing Platform.

¹⁰ Work to compile the minimum set of gender indicators is currently under way and a public database developed and maintained by the UN Statistics Division with data and metadata for Tier I indicators is now available at: <http://genderstats.org/>

monitor gender equality and women's empowerment is the lack of country-level data. A recent review of gender statistics in 126 countries has found that while production of gender statistics has increased in recent years, the focus is still predominantly on traditional areas such as mortality, education and labour force statistics and less on emerging areas such as violence against women and girls or the measurement of unpaid care work through time use surveys.¹¹

28.14 Another significant challenge relates to the need to address gender equality and women's rights for different demographic and social groups. Life-cycle analyses of gender equality suggest that women and girls face different constraints that can be age-specific or may be specific to different socio-economic groups.¹² Disaggregated statistics along these lines should be promoted as well as a renewed effort to fully analyse existing survey data, and to invest in other data sources, including administrative records.

Conclusions

28.15 Much progress has already taken place in identifying a minimum set of indicators for measuring and monitoring gender equality, women's empowerment and women's rights, in line with different international commitments such as the Beijing Declaration and Platform for Action and the Millennium Development Goals.

28.16 However, in spite of the global efforts and developments, it is clear that this area still requires consistent data collection, methodological development and statistical refinement and standardization.

28.17 Significant resources will be needed to build sustainable statistical capacity in all areas of gender statistics to ensure countries have the necessary capacity to produce these data on a regular basis. Because gender statistics have not always been prioritized in national plans, particular attention should be paid to their production.

¹¹ United Nations. 2013. *Report of the Secretary-General on Gender Statistics*, prepared for the Forty-fourth session of the Statistical Commission. E/CN.3/2013/10. <http://unstats.un.org/unsd/statcom/doc13/2013-10-GenderStats-E.pdf>

¹² UNICEF. 2011. Boys and Girls in the Life Cycle: Sex-disaggregated data on a selection of well-being indicators, from early childhood to young adulthood. http://www.unicef.org/media/files/Gender_hi_res.pdf

Statistical note 29:

Conflict Prevention, Post-conflict Peacebuilding and the Promotion of Durable Peace, Rule of Law and Governance¹

Main policy issues, potential goals and targets

29.1 The TST Issues Brief emphasizes that ‘*peace, rule of law and governance issues are interlinked and mutually reinforcing*’ and are critical ‘*enablers of sustainable development in their own right,*’ as well as ‘*ends in themselves*’. In so doing, the Issues Brief follows an emerging consensus, including that found in the Report of the High-Level Panel on the Post-2015 Development Agenda,² the Secretary-General’s 2013 report on the MDGs,³ in global thematic consultations⁴ and in expert consultations.⁵

29.2 Several of these reports have proposed goals and targets on peace, rule of law and governance. Other approaches have involved mainstreaming peace, rule of law and governance issues across other development goals, targets and indicators. Underlying both approaches, however, is the agreement that peace, rule of law and good governance are universal and declared aspirations for all peoples around the world.

29.3 While the MDG indicators did not directly address the measurement of peaceful societies, rule of law and governance,⁶ it has been increasingly recognized that achievement of the MDGs requires effective, inclusive and accountable governance structures that oversee urbanization and the equitable delivery of social services, such as health, water, sanitation and education. Evidence also indicates that progress on the MDGs is affected by inequalities, violence and weak rule of law. The inclusion of peace, rule of law and governance indicators in a post-2015 framework would represent a significant step towards compilation and reporting of data on key conditions and governance structures associated with most development indicators in the MDG framework.⁷⁸ In this context, national data collection efforts and statistical capacity building are of outmost importance.

¹ The following countries and organizations contributed to the drafting and review of this statistical note: Australia, Netherlands, United Kingdom, DPKO, OHCHR, PBSO, RoLU/EOSG, UNDP, UNEP, UNICEF, UNODC and UN-Women.

² Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, 2013. A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development.

³ United Nations. General Assembly, 2013. A life of dignity for all: accelerating progress towards the Millennium Development Goals and advancing the United Nations development agenda beyond 2015. UN doc. A/68/202.

⁴ See <http://www.myworld2015.org/?page=results>

⁵ See, for example, Governance and human rights: Criteria and measurement proposals for a post-2015 development agenda (New York, 13-14 November 2012); Expert Meeting on Accountability Framework for Conflict, Violence and Disaster in the Post-2015 Development Agenda (Glen Cove, June 2013); Accounting for Security and Justice in the Post-2015 Framework (Vienna, June 2013); and Global Dialogue on Rule of Law and the Post-2015 Development Agenda (New York, September 2012).

⁶ Although it should be noted that Goal 3 (Promote Gender Equality and Empower Women) included the indicator ‘Proportion of seats held by women in national parliament.’

⁷ See, for example, Geneva Declaration, 2008. Armed Violence Prevention and Reduction. A Challenge for Achieving the Millennium Development Goals.

29.4 The TST Issues Brief lists 15 illustrative targets under the headings ‘peaceful societies’, ‘governance’ and ‘the rule of law.’⁹ While these targets are generally applicable to all countries, countries can set their own pace of improvements as applicable to the national context. At the same time, it is important that consideration of national specificities and contexts forms part of a policy dialogue on how indicators can be tailored most effectively at the national level.

29.5 Policy issues include the breadth of the concepts in the area of peace, rule of law and governance and how to select methodological sound indicators that capture relevant elements of those concepts which, at the same time, can be populated now or in the near future with valid, accurate and comparable data that are salient to sustainable development.

29.6 This brief covers the current state of international consensus around indicators and the availability of data across the spectrum. In all areas, it is critically important to consider accessibility and disaggregation of indicators in order to reveal inequalities by sex, among groups and geographic areas in achieving the goals and targets.

Conceptual and methodological tools

29.7 Recent years have seen a high degree of interest and methodological advancement in the measurement of aspects of peaceful societies, rule of law and governance, as well as human rights.¹⁰ Measurements related to the experience of individuals of violence, corruption, discrimination, the use of land and of justice services, budget transparency, business costs and perceptions of government effectiveness, security and social cohesion are increasingly commonplace.¹¹ Such measurements are increasingly utilized in international development processes, such as the Peacebuilding and Statebuilding Goals of the g7+ group of conflict-affected countries.¹² A broad range of countries have also established their own

⁸ Governance is very important to citizens, as a recent consultation in Australia found, and the development of appropriate measures should be pursued not only because of their association with most development indicators in the MDG framework.

⁹ These include, under peaceful societies: reduction of violent deaths and injuries; elimination of violence against children, women and other vulnerable groups; provision of adequate dispute resolution mechanisms; reduced inequalities; reduced external drivers of conflict. Under rule of law: universal legal identity, independence and increased responsiveness of justice and security institutions; increased capacity and professionalism of security institutions; extended access to secure rights to land, property and assets; and equal inheritance and contract rights for women. Under governance: reduced corruption, and accountability of public officials; increased political participation, universal freedom of expressions, association, and peaceful assembly; right to information; and enhanced state capacity and accountability regarding natural resources.

¹⁰ See, for example, United Nations, 2010. State of Crime and Criminal Justice Worldwide. Twelfth United Nations Congress on Crime Prevention and Criminal Justice, UN Doc. A/CONF.213/3; Hunter, D., 2000. Research Methods for Criminology and Criminal Justice, Butterworth-Heinemann; and Jupp, V., 2002. Methods of Criminological Research, Taylor & Francis. Worldwide Governance Indicators project, available at: <http://info.worldbank.org/governance/wgi/index.asp>; Afrobarometer, available at: <http://www.afrobarometer.org/>; Latinobarometer, available at: <http://www.latinobarometro.org/lat.jsp>; Asiabarometer, available at: <https://www.asiabarometer.org/>; United Nations, 2012, Human Rights Indicators: A Guide to Measurement and Implementation, HR/PUB/12/5; and Transparency International Corruption Barometer, available at: <http://www.transparency.org/research/gcb/overview>. In addition, this statistical annex should be read in conjunction with the statistical annex to the issues brief on human rights, including the right to development.

¹¹ See UNICEF, PBSO, UNDP, 2013. Report of the expert meeting on an accountability framework for conflict, violence, governance and disaster and the post-2015 development agenda, and UNODC, 2013. Accounting for security and justice in the post-2015 development agenda.

¹² See A New Deal for Engagement in Fragile States, available at: <http://www.g7plus.org/new-deal-document/>, and the interim indicators available at <http://www.pbsdialogue.org/documentupload/03%20PSG%20Indicators%20EN.pdf>.

governance assessments and metrics to measure progress in their national development contexts, including within the context of the MDGs.¹³ These have included measurement related to, for example, public administration, democracy, justice, urban governance, human rights and crime.¹⁴ As in other areas, post-2015 monitoring in these areas will need to be based on the principles and quality standards of official statistics.

29.8 The methods utilized for data compilation to inform the calculation of these measurements can broadly be classified as i) *administrative statistical systems*; ii) *sample surveys (including population-based and specialized surveys)*; and iii) *expert reviews*. In principle, all of these tools could provide data for peace, rule of law and governance-related post-2015 indicators. Given the multi-dimensional nature of peace, the rule of law and governance, each data source type ‘*carries particular trade-offs, including between specificity and breadth of context; universal application and context specificity; sensitivity of measurement and comprehensiveness; as well as in regards to considerations like cost, reliability, and measurement*’.¹⁵

29.9 *Administrative statistical systems.* Administrative statistical systems include records and data systems of governance, justice and security institutions. Many existing indicators and frameworks draw upon administrative data. For instance, civil registration and vital statistics collect information on births, deaths (including causes), marriages and divorces, which relate to legal identity, crime, health and dimensions of gender equality in family matters. Administrative systems also collect data on financial expenditure/budgets, land/cadastral records, property rights, licensing, employment and business registration and information related to banking systems. Electoral bodies, voter registries and administrative systems collect relevant information on public participation and numbers and representativeness of government personnel. Administrative records can provide information on homicide rates and the responsiveness of justice.¹⁶

29.10 *Sample surveys.* Administrative data, often considered as the most reliable kind of data, can only capture some elements of peace, rule of law and governance. Many dimensions of governance, including access to and freedom of information, freedom of speech and assembly and participation in public life are difficult to capture through currently configured administrative systems. Moreover, only a small proportion of crime, corruption, discrimination or abuse of authority is actually reported – whether to a state authority or

¹³ See UNDP Governance Assessment Portal (<http://www.gaportal.org/>) generally, see also for example, the development of MDG 9 on Governance and Human Rights in Mongolia available on the portal.

¹⁴ For example, the Strategy for Harmonization of Statistics in Africa Initiative seeks to build ownership and capacities of national statistics offices in the region on indicators related to governance and security.

¹⁵ Berg, L.A. and Deval, D., 2013. Overview on the Rule of Law and Sustainable Development for the Global Dialogue on Rule of Law and the Post-2015 Development Agenda; UNDP, 2013. Report of the Global Dialogue on the Rule of Law and the Post-2015 Development Agenda (Annex IX).

¹⁶ See, for example, the United Nations Survey of Crime Trends and Operations of Criminal Justice Systems (UN-CTS) data collection (available at: <http://www.unodc.org/unodc/en/data-and-analysis/United-Nations-Surveys-on-Crime-Trends-and-the-Operations-of-Criminal-Justice-Systems.html>); and HEUNI and UNODC, 2010. International Statistics on Crime and Justice.

otherwise.¹⁷ In the case of sexual and gender-based violence, underreporting is estimated to be as high as 70 per cent and even higher in disaster and conflict settings. Victims may not report their victimization due to a range of reasons, including shame, social pressure, associated costs, potential retribution or the lack of trust in the criminal justice system.¹⁸ In addition, in many countries, the majority of legal claims and civil and criminal disputes are resolved through informal and customary mechanisms. Effective measurement of peace, governance and rule of law requires therefore information from multiple sources, including sample surveys. Survey tools can be used to target a range of respondents and thematic areas. Population-based surveys,¹⁹ business surveys,²⁰ and sector-specific surveys, such as surveys of public servants, have all been used to collect data on peace, rule of law and governance. Sample surveys are an important tool for obtaining data on both the actual *experience* and the *perception* of individuals, including of marginalized or difficult-to-reach groups. Surveys can be useful in identifying perceptions of security.²¹ Agricultural censuses can be used to identify land ownership rights, and labour force surveys are useful tools to assess inequalities in wages and access to decision-making positions. Indicators derived from sample survey data also have the advantage that disaggregated results can be calculated when sample sizes allow and relevant respondent information is collected. Indicators derived from administrative data, in contrast, are reliant on disaggregation variables systematically used in national data collection systems. Combining administrative and survey data sources can be useful to detect gaps in realizing human rights that have a significant impact on enjoyment of peace, rule of law and governance.²²

29.11 Expert reviews. Expert assessments or data collected from key – preferably national – informants can be used to fill data gaps and to obtain qualitative information on issues such as the degree of implementation of, and compliance with, laws and policies, effectiveness of systems and structures, and the prevalence of phenomena that are not easily measured from administrative or survey-based data. These assessments are useful when they are implemented with a standard methodology that ensures a certain level of representativeness and validity. They can be conducted by a range of actors, including government institutions. Examples on the use of expert reviews to measure relevant indicators include civil and political rights and freedom of press,²³ quality of democracy,²⁴ civil society environment,²⁵ as

¹⁷ Van Dijk, J., Van Kesteren, J., Smit, P., 2007. 'Criminal Victimization in International Perspective: Key Findings from the 2004-2005 ICVS and EU ICS. The Hague, Ministry of Justice, WODC.

¹⁸ Kothari, C. and Rhodes, K., 2006 (available at: http://www.cpc.unc.edu/measure/prh/rh_indicators/specific/sgbv/prevalence-of-sgbv-among-men-and-women)

¹⁹ UNODC-UNECE, 2010. Manual on Victimization Surveys; United Nations, 2013. Guidelines for Producing Statistics on Violence against Women, United Nations, 2006; the European Union Agency for Fundamental Rights, Surveys of discrimination and hate crime in EU Member States. See <http://fra.europa.eu/en/research/surveys>; UNHabitat, Secure Tenure Indicators, Available at: <http://www.unhabitat.org/campaigns/tenure/indicators/STIdrs.html>.

²⁰ See, for example, European Union, 2013. Crime against businesses in Europe: A pilot survey, and UNODC, 2013. Business, corruption and crime in the Western Balkans: The impact of bribery and other crime on private enterprises; World Bank Enterprise Surveys. Available at: <http://www.enterprisesurveys.org/>

²¹ The use of perception surveys (or opinion polls) for the monitoring of development progress has to be carefully assessed.

²² Data from administrative sources, event based data reports, or surveys regarding acts such as arbitrary killings, torture, or other forms of ill-treatment of forced evictions are essential in assessing the effectiveness of conflict prevention and governance and rule of law systems.

²³ See <http://www.freedomhouse.org/>.

²⁴ See <https://v-dem.net/>.

²⁵ See <https://civicus.org/Civicus>

well as those included in the Mo Ibrahim Index in Africa and the World Justice Project.²⁶ Voluntary regimes, such as the Kimberley Process Certification Scheme or Extractive Industries Transparency Initiative, provide platforms to promote standards and controls and pool, exchange and compare data related to natural resource management among industry, civil society and government to detect misuse, prevent mistrust and foster transparency as well as demonstrating the contribution of the sector to society. One common form of expert assessment is the ‘structural assessment’ of the *existence* and *content* of laws, policies and systems. Structural indicators are able to provide important information about context and organizational frameworks, such as whether a legal framework preventing statelessness exists and the extent to which the institutional, legal and market framework provides secure land tenure and equitable access to land in rural areas.²⁷ They may also relate to reporting and monitoring mechanisms.²⁸ In general, however, structural indicators do not provide information about the functioning or effect of a system in practice, are not well suited to providing information about changes over time and are often reliant on the expert assessment of a limited number of individuals.²⁹

29.12 Emerging sources. New forms of technology, such as the internet, remote sensing, geographic information systems (GIS) or mobile phones have created new sources of data (so called ‘big data’), which are increasingly used to gather different types of whole-population and sample-based data as well as to visualise trends, hazards and hotspots. These sources offer very significant potential, however the issue of preserving people’s privacy needs to be addressed.

Existing and new indicators - What is there to build on?

29.13 To date, Member States have undertaken efforts towards the design of different sets of peace, rule of law and governance indicators. United Nations intergovernmental bodies, including the Statistical Commission, have agreed, for example, on indicators on violence against women³⁰ and gender³¹ and requested the development of an international classification of crime for statistical purposes.³² Similarly, the members of the Security Council have requested improved monitoring of resolution 1325 (2000) through the use of Women, Peace and Security indicators.³³

²⁶ Covering four over-arching categories (safety and rule of law; participation and human rights; sustainable economic opportunity, and human development) with 88 measures, many of them other experts assessments.

²⁷ See IFAD access to land indicator at <http://www.ifad.org/gbdocs/gc/27/e/GC-27-L-6.pdf>.

²⁸ For example, when they reflect States’ reporting obligations to human rights treaty bodies and United Nations human rights mechanisms.

²⁹ For further discussion on structural indicators in this context see UNODC, 2013. Accounting for security and justice in the post-2015 development agenda, p.50-51.

³⁰ Economic and Social Council, 2010. Report of the Friends of the Chair of the United Nations Statistical Commission on Indicators on Violence against Women. UN Doc. E/CN.3/2011/5.

³¹ See <http://unstats.un.org/unsd/gender/default.html> and <http://unstats.un.org/unsd/statcom/doc13/2013-10-GenderStats-E.pdf>.

³² See Statistical Commission, 2013. Report on the forty-fourth session, Decision 44/110. UN Doc. E/2013/24 – E/CN.3/2013/33. In addition, the UN Survey of Crime Trends and Operations of Criminal Justice Systems (UN-CTS), containing *inter alia* indicators on intentional homicide and persons detained, collect data under the mandate of the UN Commission on Crime Prevention and Criminal Justice.

³³ See http://www.peacewomen.org/security_council_monitor/indicators

29.14 International and regional organizations have developed indicators and measurement methodologies covering the rule of law,³⁴ conflict,³⁵ land and property security,³⁶ accountability and governance,³⁷ human rights,³⁸ corruption,³⁹ victimization,⁴⁰ juvenile justice,⁴¹ violence against children,⁴² human trafficking,⁴³ media development⁴⁴ and democratic representation.⁴⁵ Data is being collected for some of these indicators.

29.15 Review of this expanding body of work reveals consensus on the definition of key indicators and confidence that such data can be collectable, reliable and comparable. Examples include ‘intentional homicide per 100,000,’ ‘percentage of women subjected to physical or sexual violence,’ ‘percentage of children aged under five years whose births have been registered,’ ‘percentage of persons who think that formal/informal mechanisms to resolve disputes and interpersonal conflict are accessible’ and ‘percentage of persons who have a bank account.’ Some approaches generate ‘composite indices’ from aggregate data, such as the World Bank World Governance Indicators.⁴⁶ While a number of such composite indices are in use, indicators in the form of rates, shares or proportions are often better suited for monitoring specific targets. Individual indicators also allow data users to identify drivers of progress and stagnation over time and enable disaggregation by variables such as sex, age and social group in order to reflect differences among population groups.

29.16 Countries are increasingly using security, rule of law and governance metrics in national policy planning and there is adequate experience that can define a post-2015 framework in these areas. Depending on which dimensions of peace, governance and rule of law are to be measured, some additional work may be required. For example, while rural land use data is currently collected, efforts are still needed to develop data collection methods to broadly measure possible property rights indicators, such as the percentage of men and women with legally recognized evidence of tenure. In certain areas of governance, such as freedom of expression, peaceful assembly, association and information, possible indicators exist but international agreement around definitions might require further effort. Obstacles remain to the collection of reliable and comprehensive data in certain areas, despite their salience to sustainable development, for example on the decisions of informal or customary justice mechanisms.

³⁴ United Nations, 2011. The United Nations Rule of Law Indicators. Implementation Guide and Project Tools.

³⁵ See 2010 Secretary-General’s report on Women, Peace and Security (pp. 15-21):

http://www.un.org/ga/search/view_doc.asp?symbol=S/2010/173

³⁶ See UNHABITAT Global Land Tool Network, <http://www.gln.net/>

³⁷ World Bank Group, 2013. Worldwide Governance Indicators. Available at: <http://info.worldbank.org/governance/wgi/index.aspx#home>

³⁸ OHCHR, 2012. Human Rights Indicators: A Guide to Measurement and Implementation.

³⁹ See, for example, <http://www.unodc.org/unodc/en/data-and-analysis/statistics/corruption.html>

⁴⁰ UNODC-UNECE, 2010. Manual on Victimization Surveys.

⁴¹ UNODC and UNICEF, 2006. Manual for the Measurement of Juvenile Justice Indicators.

⁴² UNICEF, 2006. Manual for the Measurement of Indicators of Violence against Children.

⁴³ UNODC, 2012. Global Report on Trafficking in Persons.

⁴⁴ UNESCO, 2008. Media Development Indicators. Endorsed by the intergovernmental council of the international programme for the development of communication.

⁴⁵ Inter-Parliamentary Union, 2013. Indicators for Democratic Parliaments Project.

⁴⁶ World Bank, WGI. Available at: <http://info.worldbank.org/governance/wgi/index.aspx#home>

Data requirements, challenges and limitations

29.17 Many of the initiatives mentioned above accompany the definition of indicators with the production of *datasets*. Many UN entities provide datasets using standardized methodologies that cover aspects of peace, rule of law and governance, including birth registration, crime, land use, informal settlements and slum populations, gender equality and businesses. For instance, UNODC compiles and disseminates data for various crime types, criminal justice measures,⁴⁷ and experience and perception of corruption;⁴⁸ FAO compiles and disseminates statistics on land ownership periodically;⁴⁹ the UN Statistics Division collects data on gender equality⁵⁰ and housing;⁵¹ and multiple-indicator cluster surveys implemented by UNICEF in partnership with national authorities provide data on birth registration.⁵² A number of organizations compile violent deaths data based on incident reporting for countries that have experienced armed conflict in recent years.⁵³

29.18 The production of international datasets is reliant on national statistical capacity. National capacity when accompanied with a sense of national ownership of statistics ensures the most effective use of statistics for national policy planning, as well as international reporting. While many peace, governance and rule of law indicators are periodically collected by national statistical systems,⁵⁴ data availability, quality and capacity remains somewhat variable across countries.

29.19 In so far as *administrative* records are collected for operational purposes, all countries in the world have some form of relevant rule of law and governance data available. The challenge is in their coverage and comparability, and in the collation, analysis and dissemination of relevant statistical measures from underlying data. Countries for which rule of law and governance data collection is often most urgent are typically those in which administrative data is most fractured, including conflict-affected states. In such instances, recourse to *surveys* is important. National victimization, discrimination, corruption and governance surveys are part of regular production of official statistics in an increasing number of countries. Victimization survey datasets are available, for example, for over 70 countries worldwide.⁵⁵ While survey data, such as the experience of corruption or

⁴⁷ See endnote 29 and <http://www.unodc.org/unodc/en/data-and-analysis/statistics/crime.html>

⁴⁸ See <http://www.unodc.org/unodc/en/data-and-analysis/statistics/corruption.html>

⁴⁹ <http://www.fao.org/gender/landrights/en/>

⁵⁰ <http://unstats.un.org/unsd/demographic/products/indwm/default.htm>

⁵¹ The United Nations Statistics Division is responsible for collecting official national statistics on housing stock and housing conditions generated from population and housing censuses. See <http://unstats.un.org/unsd/demographic/sconcerns/housing/default.htm>

⁵² See http://www.unicef.org/statistics/index_24302.html

⁵³ See, for example, the IISS Armed Conflict database, the UCDP Battle-Related Deaths Dataset and PRIO Battle-Deaths Data.

⁵⁴ The UNODC Global Study on Homicide 2011, for example, made use of publicly available administrative criminal justice data from 143 countries. In the context of the Americas, 18 countries systematically submit administrative and survey-based data on public safety for the reporting of citizen security indicators to the '*Sistema Regional de Indicadores Estandarizados de Convivencia y Seguridad Ciudadana*.'

⁵⁵ See, for example, the International Crime Victims Survey (ICVS). Available at: <http://www.crimevictimsurvey.eu/> and <http://www.unodc.org/unodc/en/data-and-analysis/Data-for-Africa-publications.html>

perceptions, are frequently collected with the support of various organizations,⁵⁶ there is significant room for official statistics to be strengthened.⁵⁷

29.20 Capacity building is critical to strengthening the availability of peace, rule of law and governance statistics at national level. In order to improve data quality and availability, the international statistical community must work together with governments to improve the quality and availability of data through developing and harmonizing statistical standards and supporting countries to make full use of available administrative records and improve the coordination of different national data producers. The international community can contribute through standard approaches to survey questions and methodologies by supporting and providing statistical capacity building.⁵⁸ Perception data, for example, would benefit from further methodological work, such as standardization of question and response structures but also the development of new survey methods using the new technologies. Currently, a number of UN agencies are working to strengthen the capacities of National Statistical Offices and other national authorities⁵⁹ mandated to collect and analyse data related to rule of law, governance, justice and crime.

29.21 Other issues that continue to pose measurement challenges include conflict deaths and illicit flows of arms, drugs, finance and natural resources, as well as trafficked persons and smuggled migrants and the effect of informal or customary justice systems. It is also challenging to ensure that the experiences of minorities and hard-to-reach populations, including displaced persons, are fully captured. In the absence of registration systems and survey methodologies, data are often produced from alternative sources, such as media counts, civil society reports, or estimations based on statistical or analytical modelling. Additionally, sex and age-disaggregated measures need to be strengthened for peace, rule of law and governance statistics. In many cases, national statistical systems should be encouraged not only to compile the information but also to report it systematically. In other cases, additional efforts are needed to ensure sex and age-disaggregated registration and large enough sample sizes to obtain such measures from surveys.

29.22 It is particularly important to support data collection efforts that are undertaken following the principles of transparency and independence as advocated by the Fundamental Principles of Official Statistics recently approved by ECOSOC.

⁵⁶ See for example Diagnostic Surveys on Corruption conducted by the World Bank and UNODC corruption and integrity surveys; and Global Corruption Barometer produced by Transparency International. Available at: <http://www.transparency.org/research/gcb/overview>

⁵⁷ See reference in endnote 17. See also World Bank Justice Population and Institutional User Surveys. Available at: <http://go.worldbank.org/NGQKXOVHH0>

⁵⁸ Such guidance is provided, for example, in the UN-DESA Manual for the Development of a System of Criminal Justice Statistics and the UNODC-UNECE Manual on Victimization Surveys. A road map to improve crime statistics and the international crime classification system has already been approved by the Statistical Commission. See Economic and Social Council, 2012. Report of INEGI and UNODC to improve the quality and availability of crime statistics at the national and international levels. UN Doc. E/CN.3/2013/11.

⁵⁹ Examples include the SHaSA (Strategic Harmonization of Statistics for Africa) project that brings together National Statistical Offices (NSOs) in the region to design and implement surveys (using 'add-on' household survey modules) and collect data on indicators for governance, peace and security (nearly half of the continent's countries (20) have officially indicated to the African Union their readiness to integrate governance, peace and security in their official statistical system) and also the work of the UNODC-INEGI Centre for Excellence for Statistical information on Governance, Public Security and Justice in Mexico.

29.23 Finally, in selecting targets, indicators and data sources, consideration must be given to the need to avoid perverse incentives, and to achieve appropriate balances among security, civil and political rights and inclusion in a manner consistent with international law and human rights.⁶⁰

29.24 Measuring factors such as the number of security personnel, judges, or lawyers per 100,000 population, for example, does not provide any information about the capacity or professionalism. Conviction rate measures do not say anything about the quality of justice.

Conclusions

29.25 Measuring peace, rule of law and governance is feasible and necessary to guarantee the achievement of all development goals. A number of core indicators related to these concepts have been defined through international processes and are in use at the national and international levels.⁶¹ For aspects that traditionally have been harder to measure or where there have been less focused efforts, some indicator proposals exist, and robust monitoring processes are feasible, subject to some strengthening of existing methodological approaches. While the brief is optimistic about providing such indicators, it should be pointed out that substantial work will be needed to further develop the required statistical concepts and definitions and statistically robust methods of measurement in some sub-areas, in particular governance.

29.26 National ownership over the development of indicators on peace, governance and rule of law and support for the capacities of national institutions are central to measuring these issues in the context of the post-2015 agenda.

29.27 The close linkages between peace, rule of law and governance, and other development measures, highlight that the effective incorporation of related indicators to the post-2015 development framework is necessary, along with the continued production of relevant and reliable peace, rule of law and governance data. Capacity building is key in this respect, and the international community should continue to offer its support to the strengthening of national statistical systems.

⁶⁰ See Rio+20 Outcome Document, The future we want. GA Res 66/288. Member States stressed the need for goals to be ‘consistent with international law’ (para. 246), including human rights.

⁶¹ For some of them, further disaggregation is desirable.