

SYNTHETIC REPORT

REGIONAL CONSULTATIONS ON METHODOLOGIES RELATED TO THE MINIMUM SET OF IMPACT INDICATORS TO MEASURE PROGRESS IN THE IMPLEMENTATION OF STRATEGIC OBJECTIVES 1, 2 AND 3 OF THE UNCCD 10-YEAR STRATEGIC PLAN

Consultancy report
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1.0 Introduction

1-1 Background

At its eighth session in Madrid in September 2007, the Conference of the Parties of the UNCCD adopted a Ten-year (2008–2018) Strategic plan and framework to enhance the implementation of the Convention.

As by decision 3/COP8, the Committee of Science and Technology (CST) was requested to advise COP 9 on “How best to measure progress on the achievement of Strategic Objectives 1, 2, and 3 of the 10-year strategic plan”. The strategic objectives are the following:

- Strategic Objective 1: To improve the living conditions of affected populations
- Strategic Objective 2: To improve the conditions of ecosystem
- Strategic Objective 3: To generate global benefits through effective implementation of the Convention

As a response, the CST bureau developed a process designed to compile a minimum set of impact indicators that could be used by all Parties to monitor progress in the achievement of the Strategic Objectives.

The process comprises a set of questionnaire administered to all affected Parties with a purpose to identify a minimum set of impact indicators to be recommended for use. The results of this study are reported in a separate document¹ and include a detailed presentation of the specification of the impact indicators identified.

The second step in the process is the development of a set of regional analysis designed to address the issues of baseline and appropriate methodologies for collecting and processing data related to the recommended minimum set of impact indicators. The regional consultative process tackled as well the identification of required capacity building to ensure an effective utilization of the minimum set of indicators in affected countries. This document reports the results of the second phase of the process conducted in Asia, Africa, Latin America and the Caribbean (LAC), and Eastern and Central Europe with other affected (EEG/WEOG) regions.

1.2 Summary of the regional consultation process

1.2.1 Objectives

The objectives of the regional analysis are described here below:

- i. To document and review methodologies currently being used in the region for collecting, analysing, and monitoring data and information needed to use the recommended minimum set of indicators.
- ii. To analyze and recommend required training and capacity development activities to ensure future autonomy in affected countries for the collection, analysis and monitoring of data and information required to effectively using the indicators.

¹ UNCCD Minimum set of impact indicators, Leonard Berry et al. June 2009

- iii. To review existing baselines used in conjunction with the strategic indicators by affected parties in the region, and recommend suitable ones that could be used as default on a region wide basis.
- iv. To provide any recommendations toward a harmonized process and methodologies to implement the minimum set of indicators

1.2.2 Approach

On the basis of outputs received during the first consultation on the identification of the minimum set of impact indicators (list given in Annex1), the UNCCD Secretariat developed two types of follow up questionnaires for the regional consultation:

- a. A customised questionnaire administered to the fifty-four (54) Parties that responded to the first consultation. The purpose being to receive a feedback on methodologies they are currently using for the collection and processing of required data and related to each of the indicators in the minimum set, with eventual capacity development needed to ensure their effective utilization.
- b. A new set of questionnaire sent only to Parties that did not respond to the first consultation to inform them on the recommended minimum set of indicators and to solicit suggestions on eventual capacity building requirements for the efficient implementation and utilization of these indicators.

The two sets of questionnaires, translated in all UN languages, were addressed to the respective National Focal Points (NFP) and the Scientific and Technology Correspondents (STC) of the country parties.

A local contractor with 4 regionally based consultants; one from each of the UNCCD regional annexes has been recruited to handle this second step of the process. Replies received from EEG and WEOG Countries were handled together by one consultant.

The contractor was assigned to provide technical and operational assistance to the regional annexes consultants for the administration of the set of follow up questionnaires, to collect and cross-check responses to the questionnaires and take any follow up actions necessary for clarification and finally to prepare a synthetic report which summarizes the outcomes of the regional analysis.

The terms of references of the four regional consultants comprise the following points:

- Provide assistance for filling the questionnaires to NFPs and STCs with the support and collaboration of the Regional Coordination Units (RCUs) when applicable and the respective CST regional Bureau members.
- Transmit in real time the filled questionnaire received from the countries to the UNCCD Secretariat and to the contractor
- Analyse the outcomes of the questionnaire and prepare an analytical document following the format below:
 - a. An assessment of procedures and methodologies used for collecting, analysing and monitoring the data needed to implement the minimum set of indicators;
 - b. A review of the related baseline applied at national level

c. An assessment of the needs for capacity building

It is important to mention here the strong support provided by the RCUs and the Regional CST members to the regional consultants in motivating the country to contribute in this study. The regional consultation was held from 25 March to 05 June 2009.

Outputs of this phase:

- Fifty-five filled questionnaires received from Africa (11 countries), Asia (15 countries), Lac (07 countries) and EEG/WEOG (22 countries) (list given in Annex 2)
- Regular Progress reports from regional consultants to the contractor indicating action taken with individual countries, specific problems, details on delivery of responses
- Four regional consultancies' reports containing methodologies for collection and processing data, baseline associated to the minimum set of impact indicators and indication on capacity development required to fully implement the minimum set of indicators
- This present synthetic report compiling the above four regional consultants' reports

1.2.3 Expected outcomes

This second phase of the process was expected to highlight the UNCCD/CST members on the following issues:

- i) The methodologies currently in use at the region level for the collection and processing of data as well as the baseline periods associated to each of the indicators in the minimum set
- ii) Similarities in methodologies across regions
- iii) Region specific differences
- iv) A proposal for a regional capacity building initiative to improve the use of the indicators and to start implementing the same for the countries not yet using the indicators.

2.0 Results of the regional analysis

2.1 Limit of the analysis

It should be stressed out that NFPs/STCs faced constraints in filling the follow-up questionnaires and collecting information on the methodologies. This is due to two reasons: (i) non-availability of a detailed specification /definition of the recommended set of indicators during the process (ii) limited time available to interact and collect information from Specific Institution/Centre or other project dealing with the desertification/land degradation's monitoring. The result of the analysis provided here is thus relatively limited as it is based on incomplete information that should definitely be extended.

2.2 Comparative analysis on the methodologies in use

1. After an in depth review of the existing methodologies, it can be put forward that the implementation of SO1-1, SO2-1, SO2-2, SO3-2 are already in progress in most of country respondents and across the five regions. Actually, up to 50% of respondents are already using these indicators. Relatively few harmonization activities with a view to implement the set of these four indicators on a wider basis is required as clear specification is already available.

The respective methodology used to implement these impact indicators is described as follows:

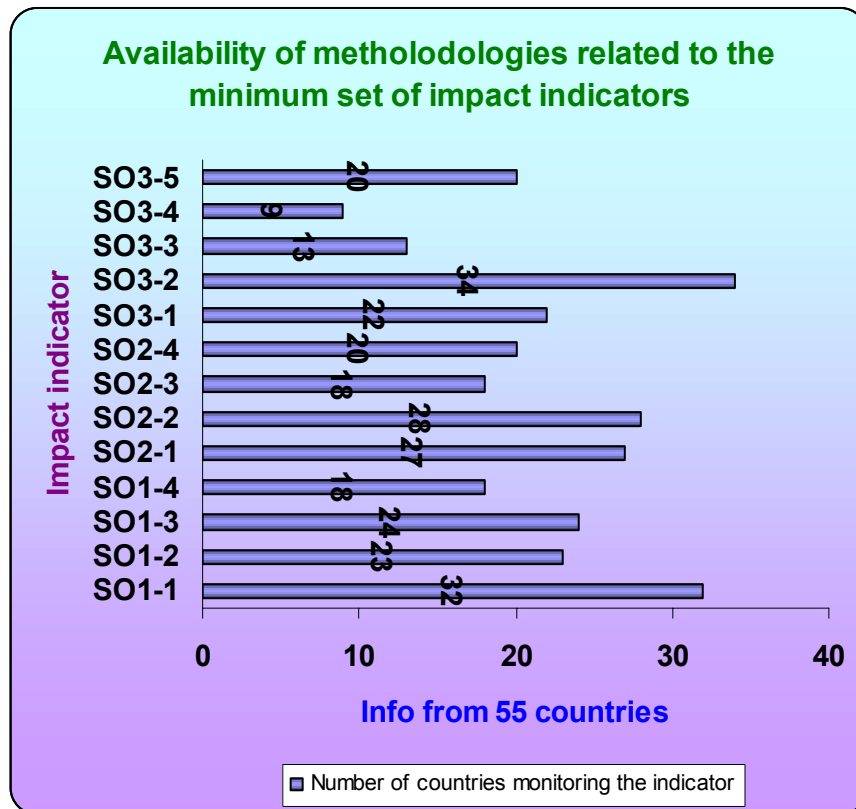
SO1-1: Percentage of population above poverty level: It can be observed that 32 countries out of the 55 are already tracking this indicator. The data on Percentage of population above the poverty level are collected from a field survey, in the framework of a poverty alleviation program or a household survey of standard living. The data collected are stored in tabular format with geo-referenced format when possible. The analysis is done using statistical and Geographic Information System (GIS) tools. The frequency of monitoring is mostly every year. It is worth mentioning that the reference of poverty line used differs from one country to another: total consumption per capita, number of persons per household, number of person with income above the required minimum income to meet the food requirement, general living conditions, proportion of population below 1\$EC per day...

SO2-1: Land use change: 27 countries are periodically measuring the surface (per hectare or square km) under land use change. Methodology of data collection is based on satellite remote sensing with field measurement, capturing several sectors such as afforestation, deforestation for agricultural and pastures field, housing and infrastructures, mining... Data are stored in tabular and spatial format to create topographic maps. Statistical, GIS and image processing techniques are used for analysis of data. Frequency of data collection varied from once a year to every ten years.

SO2-2: Level of land degradation (including salinization, erosion, wind erosion, etc): 28 countries out of the 55 countries are already tracking this indicator. The level of land degradation is mainly measured by the percentage of degraded land compared to the total geographic area. The remote sensing is mostly used as methodology to collect data, which are stored in a spatial format within the Ministry of Agriculture or Forest and soil Department. GIS tools are used for processing data. The frequency of monitoring however differs across the regions, from once a year to once very 10years.

SO3-2: Afforestation/Regeneration Areas: This is the mostly indicator already developed in the five regions. 34 countries are measuring the surface (hectare or square kilometre) of afforested/-regenerated area using both remote sensing and field survey as methodologies for collecting data. Those latter are stored in tabular and spatial format. The Forestry Department or the Agriculture Ministry is handling the data, using statistical, GIS and Imagery processing tools for the analysis. The frequency of monitoring is every year.

The following chart is reflecting the previously developed paragraphs. It reveals as well the number of countries already measuring the other impact indicators, assuming an availability of methodology related to.



2. It can be observed that the indicators SO3-3 “Recurrent drought in affected area” and SO3-4 “Level of government policies in Sustainable Land Management” are the less measured indicators in the minimum set. Actually, this latter presumes a qualitative aspect that only few of the respondents were endowed to provide tentative information related to its measurement. It is suggested to re-assess this indicator properly upon its complete definition is given and indication on its purpose clarified.
3. Therefore, as a preliminary result, apart of the set of the four previously mentioned impact indicators (SO1-1, SO2-1, SO2-2, SO3-2), it is evident that significant **challenges of harmonization** in methodologies have to be dealt with, followed by a strong initiative of **capacity development** before implementing the minimum set of impact indicators.
4. However, it should be flagged out that the **appropriateness or relevance of indicators** for each region should be addressed while implementing the set of indicators. With respect to this, the indicators SO1-1 and SO1-2 are considered as irrelevant in the EEG/WEOG countries’ context, although national data would be available. This is due to the fact that poverty, childhood malnutrition, as well as the case for SO1-4 pertaining to the population with water stress are not occurring in these countries or are not the direct effect of desertification. In relationship to this point, respondents raised up the question of the determination of “affected area” or “affected population” to refer to.
5. On the other side, the LAC countries argue that measuring the **forest cover** trends as well as the issue of **water** and its relationship with drought will be more useful

and relevant to measure the impact of the Convention, given the importance of those specific areas in their region,.

6. The next issue that should be pointed out concerns the **access to data** at the European regional level. This is facilitated due to the linkages of the UNCCD minimum set of impact indicators with other relevant regional or global assessment that are already in progress and developed. This is the case for SO1-4 “Population with water stress” and SO3-1 “Land under Sustainable Land Management” for instance, which can be derived from the European Environmental Agency (EEA) indicators, so is the case for SO3-5, which source is the carbon accounting under UNFCCC.
7. With regards to the **baseline year** i.e the data of a specified year, which can be used as a reference for monitoring purpose with the status of data available in each of the countries; responses received from countries revealed heterogeneity for each indicator and in each country. A harmonization of such is not in anyway feasible with regards to the historical progress of the implementation of environmental national action plan in respective country.
8. This study was as well addressed to report on the indicators in the minimum set **not yet in use in affected countries**: only the consultant from LAC reported the main barriers as to be the absence of data (SO1-2 and SO1-3) and where it does exist the absence of resources to effectively track the indicators. Measuring SO2-2 (level of land degradation) and SO2-3 (plant and animal biodiversity) requires relatively strong and well-funded scientific institutions due to the indicator’s specificity. Most of the indicators under the strategic objective #3 are not currently being tracked. Many relate to issues of government policy and priorities and national sustainable development frameworks. The relatively low response may point to weaknesses in these areas. A fuller understanding of these factors goes beyond a review of the questionnaires, which nonetheless turn the spotlight on these issues.

2.3 Presentation of the detailed methodologies in use

The details of methodologies currently in use in each region and related to the minimum set of impact indicators are presented in a synthetic manner to enable having an overview of the most used methodologies inventoried. In certain cases, the varieties of responses are fully reported. Responses collected are organized in tables following the structure of the questionnaire used and inform on:

- i) The unit of measurement used for tracking the indicator
- ii) The information on the methodology used for data collection: through field survey, ground based measurements or using satellite /aerial remote sensing. Information on the sampling strategy was hardly collected by the consultants.
- iii) The frequency of data collection
- iv) The spatial coverage for data collection (which should be National)
- v) The information on data storage format i.e. spatial format in GIS environment or non-spatial tabular format.
- vi) The methodology used for data analysis i.e. the spatial data analysis in GIS environment or statistical analysis or a combination of both methods.
- vii) The baseline year.

2.1 Methodologies to measure the Strategic Objective 1: To improve the living conditions of affected populations

Indicator SO1-1: Percentage of population above poverty level

Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/data	Note
	Unit of measurement	Method/ Source	Frequency	Area of application/Coverage	Data storage format	Data analysis		
Africa	% of pop affected by land degradation	Survey - poverty alleviation program	Mostly every 5 years	National	Tabular / GIS	Statistical	Differ from 1984 to 2008	Info from 7/11 countries
Asia	% of pop below poverty line	Field survey -	ev 1 or 10years	National	Tabular	Statistical & GIS tools	Differ from 1996 to 2008	11/15countries Definition of the poverty line differs in each countries
EEG/ WEOG	% of pop living above poverty line	Household Survey	Mostly per year	National	Tabular & geo-referenced	Statistical	Differ from 1950 to 2003	10/22 countries Indicator not relevant
Lac	% pop living above the poverty level	Economic or Health survey of living standard	ev 1 or 6/7 years	National	Database	Statistical	Differ from 1995 to 2001	5/7 countries Definition of the poverty line differs in each countries

Indicator SO1-2: Childhood malnutrition and/or food consumption/caloric intake per capita

Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year /Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of application/Coverage	Data storage format	Data analysis		

Africa	kg of food /capita or per/child Body Mass Index (BMI) Weight & height	Survey - Food balance sheet / nutrition program	Varies from monthly to ev. 6 years	National	Tabular	Statistical	Differ from 1990 to 2005	7/11 countries
Asia	kg of food per capita % Children undernourished food consumption/calorie intake kg daily energy food intake/capita nbr of infant and children below 5 years death	Field survey	ev 1 or 10 years	National	Tabular	Statistical	Differ from 1978 to 2007	9/15 countries
EEG/ WEOG	cal/pers/day, average weight/pers % of children under 5 years undernourished	Household survey, Health survey	mostly ev year	National	Tabular / geo referenced	NR	Differ from 1930 to 1995	4/22 countries - indicator not relevant
Lac	Body Mass Index ² Kcalories per capita / day	Health survey - Ministry of Health	ev 1 to 6years	National	Database	Statistical	1990 & 2000	3/7 countries

Indicator SO1-3: Changes in productivity of land use

Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of application/Coverage	Data storage format	Data analysis		
Africa	quintal kg/ ha crop yield	Field Survey - Ministry of Agriculture	ev 1 year	National	Tabular	Statistical	Differ from 1960 to 2005	6/11 countries
Asia	kg or ton / ha, change in soil fertility	Field survey / remote sensing tech.q	5 years	National	Tabular, spatial	GIS, Statistical	Differ from 1978 to 2008	7/15 countries
EEG/ WEOG	NVDI kg/ ha crop yield GVA	Satellite image, agricultural statistic	various: monthly, 2-3 times/year	National	Tabular & Spatial	Statistical & raster	Differ from 1990 to 2000	8/22 countries
Lac	Productivity /ha per year Productivity indice IPT productivity of soil ³ s	Field survey – Ministry Agriculture and rural development	ev 1 year	National	Database	Statistical, laboratory, GIS	only info 2000	3/7 Countries

² Body Mass Index (BMI): weight (kg)/ height (m) and the result for each individual checked against the index table established by the WHO

³ IPT productivity of the soil = Water Availability x Drainage x Effective Depth x Texture (particle size) x Erosion potential x Actual erosion x Organic soil content

Indicator SO1-4: Population with water stress								
Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of application/Coverage	Data storage format	Data analysis		
Africa	m3 /cap Litre of drinking water/day % pop with access to water nbr people/water point/water access ratio	Survey - Ministry of water resources	biannually, annually	National	GIS	Statistical	Differ from 1990 to 2004	4/11 countries
Asia	nbr or % of deprived/limited Household to water source	Field survey	Ev. 1 or 5 years	National or regional	Tabular	Statistical	Differ from 1997 to 2005	6/15 countries
EEG/ WEOG	Definition to be clarified: Regular EEA indicator uses WEI (water exploitation index) However this is not linked directly to affected population – 4/22 countries -Indicator not relevant							
Lac	nbr or % of deprived houses to drinking water source Population served Consumption (cubic metre)/ cap/year	Field survey – Institute of hydrology, meteorology & environmental studies - National Institute of Statistics & Geography and National water	1 or 2 years	National	Database	Statistical, GIS	1960 & 1993	4/7 countries
2.2 Methodologies to measure the Strategic Objective 2: To improve the conditions of the ecosystems								
Indicator SO2-1: Land use change								
Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of application/Coverage	Data storage format	Data analysis		

Africa	ha under L.U change	Remote sensing - specialised center	ev 1 or 5 years	National	Spatial	GIS	Differ from 1986 to 2002	6/11 countries
Asia	% or ha/sq km under L.U change	Remote sensing	ev 1, 5 or 10years	National	Spatial	GIS & Image Processing techniques	Differ from 1987 to 1980	8/15 countries
EEG/ WEOG	ha under L.U change / land cover category	National land cadastres, Forest Inventories and agricultural statistics,	Various from 1 to 10 years	National	GIS: vectorial and raster	Statistical & geographical	Differ from 1965 to 2000	8/22 countries
Lac	Surface of optimal agricultural yield Area of agri & animal rearing in sq metre	Field survey: topographic maps & statistic Min Agriculture	Various 1 / 4 /10 years	National	Database	Statistical, laboratory, GIS	Differ from 1950 to 1990	4/7 countries

Indicator SO2-2: Level of land degradation (including salinization, erosion, wind erosion, etc)

Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of application/Coverage	Data storage format	Data analysis		
Africa	ha affected or productivity kg/ha	Remote sensing, survey - Ministry Agriculture	ev 1 or 5 years	National	Spatial	GIS	Differ from 1970 to 2006	4/11 countries
Asia	% ha affected / total geographic area erosion rate in ton/ha/year area under land degradation	Remote sensing	Once ev 10 years	National	Spatial	GIS & Image processing	Differ from 1980 to 2002	7/15 countries
EEG/ WEOG	ha of degraded land	Remote sensing, Agricultural/forest/soil survey -	ev 1 or 10years	National	GIS & tabular	Statistical / laboratory	Differ from 1950 to 2012 (foreseen)	14/22 countries -
Lac	ha of degraded land	Remote sensing	ev 3-5year	National	Database	GIS	1996 & 2003	3/7 countries

Indicator SO2-3: Plant and animal biodiversity

Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of application/Coverage	Data storage format	Data analysis		

Africa	nbr of species, % of protected area	Field Survey - Forestry Departmt	1 year	Local, park	Spatial	Statistical	Differ from 1992 to 1996	5/11 countries
Asia	nbr of species	Field survey & remote sensing	ev 3 or 5 years	National	Tabular & thematic map	Statistical & GIS	Differ from 1994 to 2002	4/15 countries
EEG/ WEOG	nbr of species	Field survey & CBD reporting & other	from 1 to 12 years	National	Tabular & GIS	Statistical & spatial	Differ from 1950 to 2001	Monitored with other program / 7/22 countries
Lac	nbr of species	Forest & biodiversity Inventory	2 years	National	Database	Statistical & GIS	only info 1993	2/7 countries

Indicator SO2-4: Aridity index/Water use efficiency

Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of applicatio n/Coverag e	Data storage format	Data analysis		
Africa	Aridity index	Mapping / Survey - Meteorological service, Ministry Agriculture	ev 1 or 10 years	National	Spatial	GIS & statistical	Differ from 1949 to 1996	3/11 countries
Asia	Aridity index Climate moisture index Pedi drought index Fertigation in drip system of field crops (water use efficiency)	Field measurement & remote sensing tech.q	Every year	National	Spatial & tabular	Statistical	1970 & 1980	2/15 countries
EEG/ WEOG	Aridity index	Climatic & meteorological data	Every year	National	GIS & raster	Statistical, spatial	Differ from 1940 to 2000	11/22 countries
Lac	Aridity index ⁴ Drought index ⁵	Ministry of environment - Meteorological stations & cartographical interpolation of variables	Every year	National	Database (spatial)	Statistical, GIS	Differ from 1970 to 1999	4/7 countries

2.3 Methodologies to measure the Strategic Objective 3: To generate global benefits through effective implementation of the Convention

Indicator SO3-1: Lands under Sustainable Land Management

Region	Methodology for data collection	Methodology for monitoring	Methodology for processing	Baseline Year/Data	Note
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⁴ Annual index of dryness: millimeters of rain and millimeters of potential evapotranspiration (ETP)

⁵ Drought index: potential relationship between precipitation and evapo-transpiration based on a historical series of climatic data and their cartographical representation

	Unit of measurement	Method/ Source	Frequency	Area of applicatio n/Coverag e	Data storage format	Data analysis	Year/Data	
Africa	ha or % of area under SLM	Remote sensing / survey - Forest & Agri departement	ev 2 or 3 years	National	Spatial	Statistical & GIS	2000	2/11 countries
Asia	ha or square km	Field survey & remote sensing	ev 1 or 5 years	National	Tabular	GIS & Image processing & Statistical	Differ from 2003 to 2007	6/15 countries
EEG/ WEOG	Area under SLM by land use type	Field survey	NR -	National	GIS	Statistical & GIS	NR	10/22 countries
Lac	Surface ha under SLM Surface of optimal agricultural yield Area of agri & animal rearing in sq metre	Field survey – Min Agriculture and livestock (programme for improvement and conservation of land) Division of statistics and census	Once a year	National	Database	Statistical & GIS	Differ from 1950 to 2000	4/7 countries

Indicator SO3-2: Afforestation/Regeneration Areas

Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of applicatio n/Coverag e	Data storage format	Data analysis		
Africa	ha of afforested / regenerated	Remote sensing / survey - Forestry Dept	ev 1 or 2 years	National	Tabular & spatial	Statistical	1992 & 2000	6/11 countries
Asia	ha or sq km or nbr of tree planted	Field survey & remote sensing	ev 1 or 10 year	National	Spatial, Tabular	GIS, Image processing, Statistical	Differ from 1973 to 2005	12/15 countries
EEG/ WEOG	ha of afforested / regenerated forest land	Remote sensing, forest & agri statistic	Every year	National	Tabular & GIS	Statistical & GIS	Differ from 1908 to 2007	11/22 countries
Lac	Surface area / km2 Are covered / tot area / year	Satellite imagery	6-7 years	National	Database	Imager processing & statistical & laboratory	Differ from 1959 to 2000	5/7 countries

Indicator SO3-3: Recurrent drought in affected areas

Region	Methodology for data collection	Methodology for monitoring	Methodology for processing	Baseline	Note
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	Unit of measurement	Method/ Source	Frequency	Area of applicatio n/Coverag e	Data storage format	Data analysis	Year/Data	
Africa	Mm of rainfall Temperature	Remote sensing / survey - Meteorological service	ev 1 year	National	Spatial	Statistical & GIS	Differ from 1902 to 1960	4/11 countries, Senegal: ev 30 years average
Asia	PEDI Palmer Drought index ha affected for major crops	Remote Sensing & ground based measurement of meteorological variables	ev 1 year	National	Spatial	GIS & Statistical	Differ from 1980 to 1991	4/15 countries
EEG/ WEOG	ha affected land; SPI, PDSI, Aridity index	Meteorological, hydrological data	ev 1 year	National	Tabular	Statistical	NR	Definition of indicator not clear - 5/22
Lac								0 country
Indicator SO3-4: Level of government policies in Sustainable Land Management								
Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of applicatio n/Coverag e	Data storage format	Data analysis		
Africa	Decree, regulations	Official text	NR	National	NR	NR	1960 (Senegal)	2/11 countries
Asia	Depends on the government policy / Legislation formulated in each country						2004 & 2005	2/15 countries
EEG/ WEOG	To be re-assessed when more info is defined on future implementation of the indicator. Info from 3/22 countries							
Lac	Million of pesos allocated / year	NR	Every year	National	NR	NR	NR	2/7 countries
Indicator SO3-5: Carbon Stocks								
Region	Methodology for data collection		Methodology for monitoring		Methodology for processing		Baseline Year/Data	Note
	Unit of measurement	Method/ Source	Frequency	Area of applicatio n/Coverag e	Data storage format	Data analysis		

Africa	ton of carbon / ha	Statistical - Min of land, water & environment	ev 3 or 5 years	National	Spatial	GIS & Statistical	Differ from 1990 to 2000	3/11 countries
Asia	CO2 emission in Giga grams and CO2 removal in Giga grams by land use change/afforestation	Remote Sensing & field survey & data from SO3-2	ev 5/10 years	National	Spatial, Tabular	GIS & Imagery processing & Statistical	Differ from 1990 to 2008	6/15countries
EEG/ WEOG	ton of carbon / ha (carbon in top soil)	National UNFCCC carbon accounts	Every year	National	GIS	Laboratory, statistical, spatial	NR	9/22 countries - UNFCCC indicator
Lac	ton of carbon in soil & tree cover/ ha	Satellite imagery, cartography of soil	10 years	National	Geo database	Imagery processing, laboratory, GIS, statistical	only info 1998	2/7 countries

3.0 Regional capacity development required

- The first general comments reported by the five regional consultants flagged out the mandatory **need of financial resources support** to facilitate the implementation and the effective use of impact indicators: this is to cover the national survey budget and human resources development as well as for the procurement of equipments for data collection and analysis.
- It was observed by the LAC consultant that developing indicators would require a **policy framework and commitment at a national level**, this will facilitate inter-agency collaboration and will provide sources for sustained programmes.

The extract of EEG/WEOG's report here bellow realistically reflects a summary of the capacity building required in each region:

- To improve the implementation of indicators already in use
- To start implementing indicators not yet in use

A- Capacity building required to improve the implementation of indicators already in use	B- Capacity building requirements to start implementing indicators not in use
<p><i>Monitoring and data collection, Data quality and availability</i></p> <ul style="list-style-type: none"> • Improve existing methodologies and technology used for monitoring and data collection (e.g. by introducing remote sensing techniques). • Improve data comparability by using harmonised methodologies for data collection and management. • Increase the availability of data by facilitating access and data sharing among institutions. • Extend data coverage (including time coverage) and increase spatial resolution. • Expand the use of geo-referenced data and databases, as well as the availability of socio-economic data. <p><i>Assessment</i></p> <ul style="list-style-type: none"> • Improve research in areas such as sustainable land management, biodiversity assessment, carbon accounting, impacts of land degradation/desertification on human health and the environment. • Expand assessment approaches to cover economic aspects (eg assessment of economic damage). 	<p><i>Monitoring and data collection, Data quality and availability</i></p> <ul style="list-style-type: none"> • Develop national methodologies and establish processes for data collection and monitoring. • Improve data comparability and availability at the national level by facilitating access and data sharing, and by improving inter-institutional dialogue. • Provide financial support to create national baselines and introduce regular monitoring. • Establish national spatial data infrastructures. <p><i>Assessment</i></p> <ul style="list-style-type: none"> • Improve the specifications and definitions for the minimum set of impact indicators. • Identify national methodologies for the development of the indicators.

- Improve data elaboration and assessments, with particular reference to expanding the use of statistical, spatial and automated tools (eg. application of automatic classification approaches in the processing of satellite images, use of geo-statistical techniques).
- Improve the relevance of the indicators at the national level by introducing approaches which relate data and assessments to affected areas and populations.

Human resources

- Increase the technical skills and expertise of staff in areas such as GIS, spatial and statistical analysis, remote sensing, surveying and monitoring techniques (eg. soil science, plant and animal taxonomy).
- Increase manpower

Procurement and material

- Improve financial capabilities for:
 - License costs for software and training costs
 - Ancillary cartography, satellite images, aerial photographs
 - Stocktaking material (e.g. hardware).

Institutional issues

- Improve participation in institutional processes
- Improve the regulatory and technical frameworks at the national level.
- Increase the financial capacity of the institutions involved in the process with particular reference to the need for continuous investments in updating and improving input data and methodologies for assessment and monitoring.
- Increase awareness on the relevance of the assessment of the impacts of desertification and improve the outreach of results.

- Introduce the use/expand existing capabilities in terms of analytical tools and automated data processing tools (statistical, spatial analysis, remote sensing, modelling).

- Improve the relevance of the indicators at the national level by introducing approaches which relate data and assessments to affected areas and populations.

Human resources

- Increase the technical skills and expertise of staff in areas such as GIS, spatial and statistical analysis, remote sensing, surveying and monitoring techniques (eg. Soil quality, plant and animal taxonomy).
- Increase manpower

Procurement and material

- Improve financial capabilities for:
 - License costs for software and training costs
 - Ancillary cartography, satellite images, aerial photographs
 - Stocktaking material (e.g. hardware).

Institutional issues

- Develop a common understanding on the different aspects related to the implementation of the Convention in the country (e.g. sustainable land management, affected areas, affected population).
- Establish institutional processes for indicator development as input data may be collected at the local level or by different institutions and coordination of efforts would be needed.
- Improve the regulatory and technical frameworks at national level
- Increase the financial capability of the institutions involved in the process with particular reference to the need for continuous investments in updating and improving input data and methodologies for assessment and monitoring.
- Increase awareness on the relevance of the assessment of the impacts of desertification and improve the outreach of results.

4.0 Conclusions and recommendations

The present document is a synthetic report containing the results of regional consultancies conducted in the five UNCCD Regional Annexes. It focuses on methodologies to implement the minimum set of impact indicators to measure the progress in the implementation of strategic objectives 1, 2 and 3 of the UNCCD 10-year Strategic Plan. At the time of writing, 55 country parties participated in the activity in filling out the follow-up questionnaire. The outputs received from the five regions were analysed by regionally-based consultants and are presented here in a synthetic manner with a purpose to provide an overview of existing methodologies and capacity development required to start implementing the minimum set of impact indicators in all affected countries or to improve the current use of them.

4.1 Summary of the main findings

At this stage, the main findings can be summarised as following:

- i) The implementation of four (SO1-1, SO2-1, SO2-2, SO3-2) of the thirteen impact indicators is feasible even in short term as methodologies related to are existing and most of the countries are processing them with using the same approach.
- ii) The remaining nine impact indicators may be taken up for implementation in medium or longer term, when development of harmonised methodologies and appropriate capacity building will take place and a sizable number of country parties are ready for implementation.
- iii) Particular attention should be given to the relevance of some impact indicators in the EEG/WEOG context for the Lac region. The minimum set of impact indicators should then be reviewed to reflect appropriateness to each region.
- iv) The impact indicator SO3-4 should be reconsidered to rationalize its relevance. More information on its purpose should be provided for thorough understanding of its applicability.
- v) It was mentioned that efficient tracking of indicators would require a development of technical capacity, which should be adequately resourced. This financial concern might create a significant barrier to develop a consistent set of information in case it won't be addressed.
- vi) The proposal of capacity building presented here should be considered as reference to implement effectively the minimum set of impact indicator.

4.2 Summary of recommendations on appropriate methodologies to be used

- ✓ With regards to the variety of unit of measurement inventorised for some impact indicators, it is advised to refer to a further harmonisation initiative and availability of a common glossary related to, before implementation.
- ✓ With respect to the baseline year and data, the four consultants agreed to recommend the use of the latest data measured and available at each country level, and prior to the implementation of the Strategy.

- ✓ A relatively complete proposal of appropriate methodologies are received from the Asian and EEG/WEOG consultants and summarised as follows:

Strategic Objective 1: To improve the living conditions of affected populations

SO1-1: Percentage of population above poverty level

The methodology to collect “the percentage of population above the poverty level” may consist in field survey at national level. The processing of the data, stored in tabular format, can be done using statistical tools. It is also recommended to expand the use of GIS tools to have a geo-referenced data so as to create thematic maps providing spatial information. Frequency of monitoring: every 5 to 10 years.

SO1-2: Childhood malnutrition and/or food consumption/caloric intake per capita

The field survey is the suitable methodology to collect data. These latter may be stored in tabular format and statistical tools can be used for the analysis. Frequency of monitoring: every 5 to 10 years

The EEG/WEOG consultant suggests the using of the WHO standard to track this indicator and to be monitored every year.

SO1-3: Changes in productivity of land use

The field survey is the current and mostly methodology used to collect the “kg or ton of productivity per hectare crop yield” and it can provide consistent results. Statistical tools are used for processing the data. It is suggested however to collect data by remote sensing as it is faster if the expertise is available and thus to analyze the data with GIS and image processing techniques accordingly. Frequency of monitoring: every 5 years

SO1-4: Population with water stress

The methodology for data collection can be based on field survey and to be conducted every year. Statistical tools are to be used for processing the data.

The EEG/WEOG consultant is suggesting the using of EEA indicator based on Eurostat data for this region.

Strategic Objective 2: To improve the conditions of the ecosystems

SO2-1: Land use change

The satellite remote sensing is the appropriate methodology to collect the “hectare under land use change” data. GIS and image processing techniques are to be used for data analysis. Frequency of monitoring: every 5-or10 years

SO2-2: Level of land degradation (including salinization, erosion, wind erosion, etc)

The methodology recommended to collect the “hectare of degraded land out of the total geographical area” data is the satellite remote sensing. The data collected can be analyzed through GIS and image processing techniques. Frequency of monitoring: every 5-or10 years.

SO2-3: Plant and animal biodiversity

A combination of remote sensing and field survey/visits will be the best method to collect the “number of species” data for plant biodiversity. For animal biodiversity, field

data collection is required. Data can be generated in tabular form but thematic maps can be generated using GIS analysis. Data collection frequency can be 5/10 years.

SO2-4: Aridity index/Water use efficiency

Field measurement and remote sensing can be combined for data collection related to “aridity index”. A climatic data set can be processed using statistical and GIS tools. Tabular and spatial data storage format may be required. Frequency of data collection can be ‘yearly’.

Strategic Objective 3: To generate global benefits through effective implementation of the Convention

SO3-1: Lands under Sustainable Land Management

The “hectare of land under sustainable land management” data can be collected through field survey and remote sensing techniques. Statistical, GIS and Imagery Processing can be used for analysis of data. Frequency of data collection: every five years.

In EU countries, data are collected on the area of land under organic farming (EEA indicator).

SO3-2: Afforestation/Regeneration Areas

Remote sensing and/or field survey can be used to collect the “hectare of afforested/regenerated” area data. GIS and image processing tools are required for analysis of spatial data and for creating the spatial thematic information. This indicator can be also derived from analysis of SO2.1 “land use change”. The frequency of data collection can be every 5 years.

SO3-3: Recurrent drought in affected areas

Data collection based on remote sensing and ground-based measurements of meteorological variables are required. Spatial information can be analyzed using statistical and GIS tools. Frequency of data collection: every year.

SO3-4: Level of government policies in Sustainable Land Management

This indicator would require an agreed definition, as it mostly depends on the government policy formulated in each country. A capacity development towards all affected countries is needed for complete use of this indicator.

SO3-5: Carbon Stocks

Remote sensing and field survey/measurements can capture data on carbon sequestration by the forest/vegetation. Assessment of carbon stock in soils will require field survey methods. GIS, image processing and statistical analysis will be required for data analysis. Frequency of data collection: every 5 years.

In most of EU countries, the source of data related to this indicator derives from carbon accounting under UNFCCC.

To conclude, it is essential to mention that the representativeness of responses received (55 countries i.e 36% of affected countries which used to report on the implementation of the Convention) is sufficient to validate and accredit the result of this study. These preliminary results were presented to the CST members during its inter-sessional bureau meeting held on 25-26th May 2009 here in Bonn. This activity was definitely

appreciated and envisaged to be a first step into the process of harmonization of methodologies, which will be carried out after the COP 9, in accordance with CST work plan and programme. The next closer step will be to bring, the minimum set of impact indicators with the methodologies related to, back on the table during the coming regional meeting, for discussion and refinement.

Annex

Annex 1: List of the UNCCD minimum set of impact indicators

Strategic Objective 1: To improve living conditions of affected populations

- SO1-1: Percentage of population above poverty level
- SO1-2: Childhood malnutrition and/or food consumption/caloric intake per capita
- SO1-3: Changes in productivity of land use
- SO1-4: Population with water stress

Strategic Objective 2: To improve the conditions of the ecosystems

- SO2-1: Land use change
- SO2-2: Level of land degradation (including salinization, erosion, wind erosion, etc)
- SO2-3: Plant and animal biodiversity
- SO2-4: Aridity index/Water use efficiency

Strategic Objective 3: To generate global benefits through effective implementation of the Convention

- SO3-1: Lands under Sustainable Land Management
- SO3-2: Afforestation/Regeneration Areas
- SO3-3: Recurrent drought in affected areas
- SO3-4: Level of government policies in Sustainable Land Management
- SO3-5: Carbon Stocks

Produced by Leonard Berry et al. 2009

Annex 2: List of Country Parties participants

STATUS OF FOLLOW-UP QUESTIONNAIRE FILLED RECEIVED - 05/06/09

QR FILLED: QR2-1: Customized follow-up questionnaire **QR2-2:** Generic follow-up Questionnaire

N	REGION	COUNTRY	RECEIPT DATE	QR FILLED	SENDER	ACK REC SENT	CC REG CONS
1	Africa	Algeria	29. Apr	QR2-2	Safar Zitoun		29. Apr
2	Africa	Burkina Faso	30. Apr	QR2-1	Tankoano Michel	11. Mai	30. Apr
3	Africa	Egypt	19. Apr	QR2-1	STC	20. Apr	20. Apr
4	Africa	Eritrea	20. Apr	QR2-1	STC	20. Apr	20. Apr
5	Africa	Mali	20. Mai	QR2-1	NFP		20. Mai
6	Africa	Morocco	30. Apr	QR2-1	NFP	11. Mai	04. Mai
7	Africa	Niger	24. Apr	QR2-1	Boubacar Zalia - Cab PM	11. Mai	24. Apr
8	Africa	RDCongo	28. Apr	QR2-1	NFP	11. Mai	28. Apr
9	Africa	Senegal	29. Apr	QR2-2	NFP		29. Apr
10	Africa	Tanzania	29. Apr	QR2-2	NFP		29. Apr
11	Africa	Uganda	29. Apr	QR2-1	NFP	11. Mai	29. Apr
12	Asia	K Saudia Arabia	11. Apr	QR2-1	NFP	16. Apr	14. Apr
13	Asia	Bhutan	22. Apr	QR2-1	Received from Regional Consultant		22. Apr
14	Asia	Cook Island	05. Mai	QR2-1	Heimata Louisa	11. Mai	05. Mai
15	Asia	Indonesia	29. Apr	QR2-1	STC	11. Mai	29. Apr
16	Asia	Kazakhstan	09. Apr	QR2-1	Farida Akiyanova (Inst geography)	20. Apr	20. Apr
17	Asia	Lebanon	24. Apr	QR2-1	STC	11. Mai	24. Apr
18	Asia	Mongolia	27. Apr	QR2-1	STC	11. Mai	27. Apr
19	Asia	Nepal	15. Mai	QR2-1	Received from Regional Consultant		15. Mai
20	Asia	Philippines	24. Apr	QR2-1	STC	11. Mai	24. Apr
21	Asia	Sri Lanka	06. Mai	QR2-1	NFP	11. Mai	06. Mai
22	Asia	Syria	16. Apr	QR2-1	h_habib@aloola.sy	16. Apr	16. Apr
23	Asia	Uzbekistan	22. Apr	QR2-1	STC	11. Mai	22. Apr
24	Asia	Vietnam	21. Apr	QR2-1	NFP	21. Apr	22. Apr
25	Asia	Yemen	20. Apr	QR2-1	STC	20. Apr	20. Apr
26	EEG	Armenia	29. Apr	QR2-2	NFP		29. Apr
27	EEG	Belarus	22. Apr	QR2-1	NFP	11. Mai	22. Apr
28	EEG	Bosnia and Herzego	04. Mai	QR2-2	NFP		04. Mai
29	EEG	Bulgaria	30. Apr	QR2-1	NFP	11. Mai	30. Apr
30	EEG	Hungary	21. Apr	QR2-1	NFP	21. Apr	21. Apr
31	EEG	Montenegro	18. Mai	QR2-2	Milena Kapa		06. Mai
32	EEG	Republic of Moldova	18. Mai	QR2-2	Maxim Kulacov		07. Mai
33	EEG	Romania	27. Apr	QR2-1	NFP	11. Mai	27. Apr
34	EEG	Serbia	26. Mai	QR2-2	Received from Regional Consultant		26. Mai
35	EEG	Slovak Republic	30. Apr	QR2-2	STC		30. Apr
36	EEG	Slovenia	26. Mai	QR2-2	Received from Regional Consultant		26. Mai
37	EEG/WB	Ukraine	30. Apr	QR2-2	NFP		30. Apr
38	LAC	Argentina	29. Apr	QR2-1	Vanina Pietragalla	11. Mai	29. Apr
39	LAC	Colombia	30. Apr	QR2-1	Paola Bernal	11. Mai	30. Apr
40	LAC	Cuba	16. Apr	QR2-1	CST mbr Nery	20. Apr	17. Apr
41	LAC	El Salvador	23. Apr	QR2-1	Abril Mendez	11. Mai	22. Apr
42	LAC	Mexico	24. Apr	QR2-1	Rubi Cuenca - Conafor	11. Mai	24. Apr
43	LAC	Panama	21. Apr	QR2-1	Abril Mendez	11. Mai	21. Apr
44	LAC	Rep Dominicana	9.04. / 27.0	QR2-1	Bradley Guye / Pedro Garcia	11. Mai	9.04 / 27.0
45	WEOG	Greece	23. Apr	QR2-1	NFP	23. Apr	23. Apr
46	WEOG	Australia	04. Mai	QR2-1	NFP		04. Mai
47	WEOG	Canada	05. Mai	QR2-1	STC		05. Mai
48	WEOG	Cyprus	30. Apr	QR2-2	Anna Savvidou		30. Apr
49	WEOG	Israel	24. Apr	QR2-1	NFP		24. Apr
50	WEOG	Italy	28. Apr	QR2-1	STC		28. Apr
51	WEOG	Malta	26. Mai	QR2-2	Stephen Saliba		25. Mai
52	WEOG	Portugal	27. Apr	QR2-1	STC		27. Apr
53	WEOG	Spain	28. Apr	QR2-1	Rojo Serrano		28. Apr
54	WEOG	Turkey	29. Apr	QR2-1	STC		29. Apr
55	WEOG	United States	24. Apr	QR2-1	Michel Pellant		24. Apr