VII APPROACHES IN SELECTING A CORE SET OF INDICATORS

VII.1 Introduction

In Chapters III to VI of this Handbook, and in associated annexes, numerous examples of rural and rural development indicators, as defined by international organizations as well as by national agencies, were presented.

The selection of a particular set of indicators is based on:

- The policy issues under consideration;
- Which definition of rural is actually chosen (which also reflect policy concerns); and
- Data availability.

It is therefore not meaningful to present a recommended set of indicators, as such a set is "a moving target".

Rather, the main purpose of this chapter is rather to provide a statistical **framework** to aid the identification and construction of a core set of indicators that will be useful to describe "rurality." Establishing this framework involves drawing on and generalising from the material contained in preceding chapters. A degree of repetition is inevitable, at least as far as principles are concerned. At the end of the chapter, a list of suggested areas of general interest to the users (and thus also to the suppliers) of statistics on rural development is provided, with examples of indicators, based on considerations of operational feasibility.

Large numbers of statistical indicators are available to measure socio-economic phenomena. Many are put forwards in publications and on websites by national, international and independent institutions. Any indicator will provide information on some characteristics of the phenomena under observation. However, the selection of suitable indicators requires that account be taken of the **correlation** among the variables under consideration and the **measurability** of the specific indicators. The calculation of several highly correlated indicators is not useful either from an analytical or an economic point of view. Second, the selection of suitable indicators has to be done in relation to the particular focus of the present Handbook – that of **rurality**.

Summary indicators (developed from a combination of individual indicators) might also under certain circumstances be useful in order to provide an overall view of rurality. However, it is important when dealing with summary indicators to understand their composition and the limitations that arise from the way that they are constructed. The issue of weighting in the construction of synthetic indicators suggests a careful application of this kind of indicator and a requirement to make the components visible (for more information on this specific problem, see Chapter III.5).

VII.2 Two approaches in selecting indicators

There are two main approaches to selecting indicators that depict some aspect of the rural condition. These two approaches, in turn, rest upon two different conceptualisations of rurality – the sectoral and the territorial (see Chapter II.2 and II.3).

In one perspective of rurality, agriculture and other related or non-urban economic activities (fishing, lumbering, mining, etc.) characterize the rural world and what are considered rural areas. In this **sectoral approach**, rural households are defined according to their main economic activity (agriculture, forestry, mining etc.). It is then possible to apply rural indicators to this subpopulation of households and compare them to rural households in different regions, or to non-rural households in the same region. The sectoral approach is mainly used in developing countries where rurality is almost exclusively identified with agriculture, forestry and fishing because of the dominant position of these economic activities.

The second conceptualisation of rurality, is a geographic (or territorial or spatial or an area) concept.[1] In this **terrotorial approach**, rurality refers to the **distance** of the household with respect to accessing markets or services and it refers to the **density** of the settlement in which the household is located (as larger settlements provide agglomeration economies that allow the provision of "higher-level" services (such as complex hospital procedures and professional sporting events). Thus, in the territorial approach, rural areas are identified in relationship to their spatial characteristics that describes:

- (long) distances; and
- (low) population density.

The indicators can be used to compare different rural areas or to compare rural areas to non-rural areas. Thus, according to this approach, which is mainly used in developed countries with a low agriculture population, rural populations live at a distance from a population centre and they live in areas with a low population density. The economic and social implications are that rural populations have more difficulty accessing urban markets and they have more difficulty in accessing the non-market benefits (such as hospitals or ballet performances) of urban agglomerations. A low population density implies that rural populations lack urban agglomeration economies - and urban agglomeration economies are now driving economic development in many countries.

It is recommended that the choice of geographical unit be based on the specific policy issue under consideration (Chapter III.1). For example, in rural areas with no access to treated water, water quality would be a very local issue and a definition of rural based on neighbourhoods or localities would be appropriate. However, for regional issues, such as access to jobs within a commuting area or the access to surgical procedures, then the choice of the definition of rural should be based on regional territorial units - like a county or, in some countries, a regional planning authority.

Typologies of rurality. For some policy issues, localities, neighbourhoods, regions, countries, etc. may be rolled up to provide a typology of various types of rural areas. This often allows a gradient from 'most rural areas' to 'least rural areas' to be constructed (for a review, see Chapter III.2). Sometimes, it is important to classify individual communities as 'rural' versus 'urban' within larger 'predominantly rural' and 'predominantly urban' regions. This is particularly important because 'rural' communities within a

[1] It is acknowledged that for some discussions, "rural" is a social construct and thus perceptual notions of "rural" would be appropriate for these discussions. It is also acknowledged that historically, rural was agriculture, fishing, lumbering and mining and these activities all used to take place in rural areas. However, within each of these areas, there were also merchants selling various goods and people providing services (such as teachers and tavern operators) so that not all the people in these areas were workers in agriculture, fishing, mining and lumbering. Sometimes these workers lived in villages or towns and, at a certain size of settlement, there would be some urban services (such as a post office, tavern and a grocery store) available. Thus, for these questions, their settlement was "urban." For other discussions, the classification of the household according to the sector of employment of the head of the household is important (for example, the international fluctuation of the prices of the output of the agriculture, fishing, mining and lumbering sectors hit these households directly) but these discussion are independent of the "rurality" (i.e. distance and density) of the location of the household.

'predominantly urban' region would be expected to have different problems and different solutions than a 'rural' community in a 'predominantly rural' region.

The wide difference in levels of development in several key geographical areas of the world suggest that, besides the core set of indicators, there is a need for some specific focuses. Some themes are more relevant to developed countries, such as environmental conservation and rural sustainability. Other themes are more relevant to developing countries, such as poverty reduction and health care (see Chapter II for a review of policy concerns among countries at different stages of economic development).

This approach is already adopted by international organizations with regard to developing countries where the question of rural development is more closely related to overall problems of general development. Having said that, in order to foster comparability across different areas, these special focuses (or departures from a common set of indicators) need to be limited.

VII.3 Rural indicators classified by themes

In Chapter III.4 details were given about themes to which indicators are classified as proposed by the OECD, Eurostat, World Bank and FAO. By and large these sets of themes resemble each other, which is, of course, no surprise. All four proposed set of themes constitute good examples for countries or agencies wanting to set up rural development indicators.

The observation of rurality can be done from several perspectives, suggested by different theories of development. The corresponding themes of interest could be utilized for the construction of rural indicators. Besides the four sets of themes mentioned above, two alternative schemes are also proposed here, aspects of which are already part of national and international statistics. In Section VII.5 examples of indicators are given for various themes within the two schemes.

Scheme I

A. Components of rural development

1. Natural environment;
2. Social well-being;
3. Conditions for economic well-being.

B. Potential of rural development

1. Territory with respect to population;
2. Economic structure;
3. Communications.

C. Special focuses on developing countries

Scheme II

In this scheme the focus is on the development process. The discussion on indicators of development starts from a framework for understanding "sustainable livelihoods" as suggested by the

Department for International Development (DFID) in the report: Introduction to the Sustainable Livelihoods Approach.[2] (www.livelihoods.org/info/info_guidancesheets.html)

DFID defines livelihood as the combination of "the capabilities, assets and activities required for a means of living". Within this livelihood context the core analytical framework starts from the so-called asset pentagon, which contains the following five categories:

1. **Natural capital;**
2. **Financial capital;**
3. **Human capital;**
4. **Physical capital; and**
5. **Social capital.**

Communities and regions achieve desired outcomes by applying strategies that exploit these assets. Indicators or statistics on strategies are difficult to conceptualize and, typically, the strategy that works for one community or region will not be appropriate for another. However, some indicators or statistics that measure:

6. **The capacity of the community / region to generate and to implement strategies** will be proposed**.**

Finally, indicators of:

7. **Desired outcomes** would need to be monitored.

It quickly becomes obvious that there are no hard-and-fast rules for assigning a given indicator to a given category. Rather, the purpose of these categories is to remind us that these five assets are important in the development process of urban and rural communities and regions.

A list of examples of indicators relating to these two schemes appears at the end of this chapter.

VII.4 Measures of rurality

VII.4.1 Defining the characteristics of an indicator that deals with rurality

Statistical indicators have to satisfy certain properties to be useful and effective (see Chapter III.3). This is particularly true for indicators dealing with rurality.

The first characteristic of a rural indicator is that it should use variables that are **reliable and simple to measure**. This implies that the data inputs required for the calculation are cheap to acquire and easy and straightforward to get from a respondent or to access from an administrative data source (for indicators such as municipal expenditures or available hospital beds in the given rural area). Resource costs are particularly important for rural statistics in poor countries.

The second characteristic of a rural indicator is that it must have **feasibility** of measurement, preferably on a worldwide basis, and **comparability**. It is important to remember that from a sustainable development perspective, measurements of rurality are relevant mainly in relative terms, such as:

[2] DIFD is a British government department responsible for promoting development and the reducing poverty.

1. a rural area compared to another rural area; or
2. a rural area compared to a non-rural area.

VII.4.2 Statistical requirements of a rural indicator

The following is a list of requirements for a good quality indicator, developed from Chapter III.3:

1. *Understandable*: should be clear and brief, easy for users to read and understand.
2. *Transparent*: inputs and the process of production should be clear. Users should know how it is produced, where the information comes from, how the information is processed and how it is calculated.
3. *Significant and relevant*: should be informative to users.
4. *Analytical*: should give a sufficient insight into the phenomena.
5. *Complete*: should cover the whole population of statistical units or the whole geographical area.
6. *Reliable*: should have little statistical error or noise.
7. *Comparable*: there are different levels of comparability:

    7.5. Inside comparability: should be possible to compare the same indicator for two subpopulations or areas;
    7.6. Outside comparability: should be possible to compare the indicator with similar indicators from other sources (different data sources or different producers);
    7.7. Inter-temporal comparability: should be possible to review the indicator over time.

    To achieve comparability, it is necessary to have clear and constant definitions and classification.

8. *Coherent:* should have the same reference period, accountancy criteria and mode of calculation as other information sources.
9. *Continuous*: should have no interruptions in the indicator time series.
10. *Accessible*: should be easy to get by users in terms of effort, time and money costs.
11. *Timeliness*: should provide information to users as close as possible to the occurrence of the phenomena under study.
12. *Not expensive*: cost of production should be minimized (in terms of money and the burden on the respondent) in proportion to the information produced.

For an indicator to be useful in representing a socio-economic attribute, it should satisfy these 12 points.

VII.4.3 Three dimensions of any indicator

Three dimensions may be identified when assembling any indicator:

1. The **state** or situation or level of the indicator (such as the per cent of females, 25 to 54 years of age, with a secondary school diploma in all rural territorial units within a country);
2. The **dispersion** or concentration or variability of this indicator (such as the GINI Index of Inequallity across all rural territorial units of the per cent of females, 25 to 54 years of age, with a secondary school diploma; or perhaps more simply, the number of rural territorial units where this "per cent" is less than one half of the national average); and

3. The **tendency** or trend of this indicator over time.

Each dimension of a given indicator adds important information for the policy discussion.

The purpose of statistical indicators is to highlight those aspects considered sufficient to describe the socioeconomic characteristics by degree of rurality. First, to summarize the phenomena it is necessary to produce some measures of the **level.** These have to include only principal and uncorrelated components. Second, some measures of component **dispersion** and **concentration** should be provided. Finally, are things improving of getting worse - what is the trend over time?

Rural households are typically the unit of observation from which data are tabulated for each rural territorial unit (such as the per cent of households with a single parent as the head of the household)[3]. An example of an indicator calculated on the rural households base is the normalized mode of per capita real income of the households in a given year in a given rural area[4]. The dispersion and concentration of this variable can be measured in various ways, such as by the normalized squared error from the mode and the Gini Index of Inequallity. (See Chapter XI later in this Handbook for a review of measures of inequallity in the context of agricultural household incomes).

An example of an indicator calculated from an administrative database might be the normalized mortality rate for children under 5 years of age for a given year for a given rural area. The dispersion and concentration indicators could be calculated across all similar rural areas.

Beside measurements of dimension, dispersion and concentration taken at a single point in time, it is often useful to have a measure of **tendency over time**. For many characteristics of rurality, time series data are necessary to calculate the inter-temporal rates of improvement or growth, or the average of these rates over a set period of time. Averaging the rate of growth over, for example, five years might be preferable for understanding tendency because short-term volatility will be excluded.

Finally, we note that each dimension (**level**, **dispersion** and **tendency**) of an indicator for a given rural territorial unit may be compared to other rural territorial units or to urban territorial units to obtain a measure of imbalance in development or to measure a socioeconomic discrepancy.

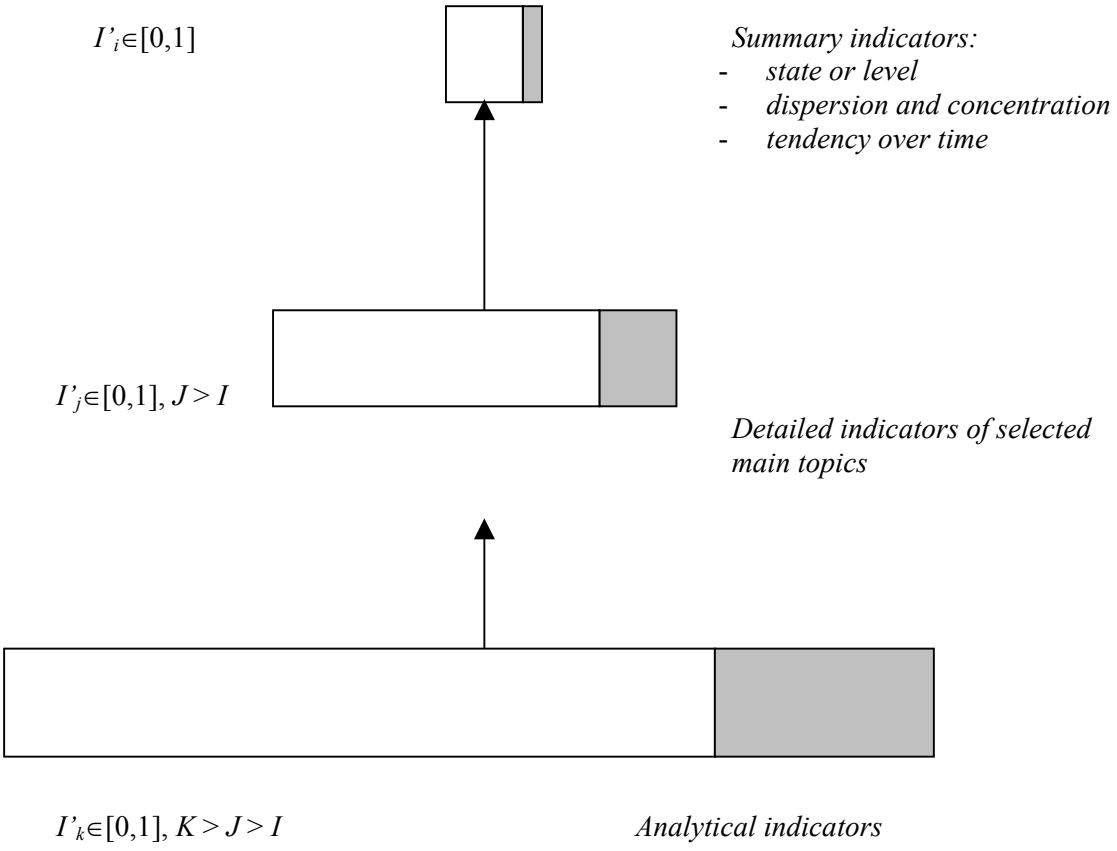
VII.4.4 A graduated sequence of rural indicators

When selecting indicators it must be remembered that not all indicators have the same informative capacity with respect to the phenomena under observation. Moreover, too many indicators can create confusion and produce misinformation for the final user. For this reason, this Handbook recognizes the value of using a graduated sequence of rural indicators, such as the hierarchy summarized in Figure VII.1.

[3] In some cases, the rural area itself becomes the unit of observation in cases where the statistical agency might publish data collected from an administrative data source (such as the per cent of the municipal budget allocated to education for a given rural territorial unit).

[4] Mode is suggested for variables that are not normally distributed among the population even if in practical terms, as a first approximation, normal mean is applied.

Figure VII.1



Source: IWG.AgRI Task Force.

VII.5 Suggested sets of rural indicators

Two alternative possible schemes are presented below which evaluate the state, tendency over time, variability and concentration of rural development.

Scheme 1

A. Components of rural development

A.1 Natural environment

Character: Quality of the countryside and the condition of the natural environment (natural resources and wildlife), as necessary requirements to reach a good quality of life and as an opportunity to enhance the economic conditions of the rural population.

Suggested proxy indicators:

1. State

Per capita drinking water:	cubic metres of drinkable water at time *t* / population at time *t*
Per capita CO_2 emission:	tonnes of CO_2 emission at time *t* / population at time *t*
Per capita energy consumption:	KWh of energy consumption at time *t* / population at time *t*
Biodiversity index:	number of animals (farmland birds, wild beasts, farm animals) at time *t* / square kilometres of the surface at time *t*
Landscape index:	square kilometres of land lost from agriculture and forestry to industrial, housing, road and other uses at time *t* / square kilometres of the surface at time *t*
Waste recycling index:	per cent of waste that is recycled at time *t*

2. Tendency over time

For each indicator:	indicator at time *t* / indicator at time *t-1*

A.2 Social well-being

Character: Quality of social life and welfare. Good quality means good education and health; reduced risks and vulnerability of people.

Suggested proxy indicators:

1. State

Literacy rate:	per cent of population, aged 15 – 24, who have completed a given level of formal schooling at time *t*
Infant mortality rate:	number of deaths of infants (under one year of age) per 1,000 live births at time *t*
Newspapers per capita:	number of newspapers sold at time *t* / population at time *t*
Political rights:	per cent of the eligible voters who voted in the last election
Green areas rate:	green area as a per cent of total area at time *t*

2. Tendency over time

For each indicator:	indicator at time *t* / indicator at time *t-1*

A.3 Conditions for economic well-being

Character: Income and wealth of people.

Suggested proxy indicators:

1. State
   Real per capita income: real income at time *t* / population at time *t*

2. Tendency
   Real per capita income growth: real per capita income at time *t* / real per capita income at time *t-1*

3. Dispersion and concentration
   Real per capita income inequallity: normalized squared error from the mean at time *t*
   Gini Index of Inequallity at time *t*

B. Potential of rural development

B.1 Territory with respect to population

Character: territory available to the rural population to live, to cultivate (usable agricultural land) and to perform other economic activities.

Suggested proxy indicators:

1. State
   Per capita territory: square kilometres of the surface at time *t* / population at time *t* (which is the inverse of the population density)
   Per capita AAU: agricultural Area Utilised (AAU) (square kilometres) by rural population at time *t* / rural population at time *t*
   Rural youth: rural population under 14 at time *t* / rural population at time *t*

2. Dispersion
   Per capita territory: number of rural territorial units within each size class of square kilometres of surface area per inhabitant at time *t*
   Per capita AAU: number of rural territorial units within each size class of AAU at time *t*

3. Tendency over time
   Rural pop. growth: rural population at time *t* / rural population at time *t-1*

B.2 Economic structure

Character: Health of the economic environment of the rural population.

Suggested proxy indicators:

1. State
   employment rate: population employed at time *t* / population at time *t*
   local government debt rate: local government debt in region *r* at time *t* / population in region *r* at time *t*

2. Tendency over time

migration rate:	per cent net flow of population at time *t*
employment growth rate:	population employed at time *t* / population employed at time *t-1*
local government debt reduction:	local government debt in region *r* at time *t* / local government debt in region *r* at time *t-1*

B.3 Communications

Character: Ability of rural population to communicate and interact with the rest of the world.

Suggested proxy indicators:

1. State

Per capita stations:	number of stations (railway stations, ports and airports) at time *t* / rural population at time *t*
Per capita telephones:	number of telephones (home, mobile and public) available at time *t* / population at time *t*

2. Tendency over time

Per capita stations rate of growth:	number of stations at time *t/* number of stations at time *t-1*
Per capita telephones rate of growth:	number of telephones at time *t* / number of telephones at time *t-1*

C. Special focus on developing countries

This is a list of characters that are relevant from a developing country perspective. The construction of indicators is not suggested as the final choice will depend mainly on data availability in any country.

C.1 Market and institutions

- food price index
- membership in organizations of agricultural producers

C.2 Infrastructure

- rural population with access to electricity

C.3 Poverty

- rural population living on less than $1 a day
- rural child malnutrition

C.4 Agriculture

- agricultural productivity
- food production index

C.5 Natural resource

- forests and deforestation

C.6 Education

- rural female literacy with respect to rural male literacy
- net rural enrolment ratio in primary education

C.7 Health

- infection among rural population

Scheme 2

ASSETS, CAPACITY to design and implement strategies and desired OUTCOMES for sustainable livelihoods

Selected possible indicators for urban and rural populations	One possible rural-specific indicator for this item
Potential indicators of the ASSETS of a locality or region are:	
Natural capital:	
Potential drinkable water per capita, within a given time period	How much time per day is required to access and transport water for an average family?
Hectares of arable land per capita	
Hectares of forested land per capita	
Financial capital:	
Share of population with savings over a given limit (say, with savings greater than one half of the individual's annual income)	What share of these "savings" is in fixed assets (e.g. land, buildings, machinery) and what share is in liquid assets (e.g. stocks, bonds, bank accounts)?
Availability of financial institutions (banks, lending circles, etc.) within the community / region (e.g. number of institutions or distance to the nearest institution)	Is the institution required to re-invest a certain share of its portfolio in the local community?
Physical capital:	
Per cent of population living in a household with electricity	For persons without electricity, what share has no access to electrical services?
Housing stock (number of persons per room in the dwelling)	
Per cent of population within one kilometre of a paved road	
Per cent of population within one hour of an international airport	
Human capital:	
Infant mortality rate: number of deaths of children under one year of age as a per cent of all live births within a given the time period	For infants who die, what per cent die due to a lack of access to maternal care?
Per cent of population, for a given age group, who are literate (For some countries, the OECD Adult Literacy Survey is appropriate. Alternatively, one might tabulate the share of the population, within a given age group, who have completed a given number of years of formal schooling.)	
Per cent of children, within a given age group, enrolled in formal schooling	For each age group, per cent of population living more than 30 minutes from a school.
Per cent of population living more than one hour (or one half hour) from a hospital	
Social capital	
Number of newspapers sold per capita, within a given time period	Share of news that is local, national and international

Selected possible indicators for urban and rural populations	One possible rural-specific indicator for this item
Per cent of eligible electors who voted in a recent election	
Per cent of individuals living in a residence with a telephone (land line or cell phone)	
Per cent of individuals of a given age group who participate in a voluntary organization or community groups	
Potential indicators of the **CAPACITY to design and implement development strategies** would include:	
Per cent of the population, for a given age group, who have attained a secondary school diploma;	For population 20 to 24 years of age without a secondary school diploma, per cent who live more than 30 minutes from a secondary school
Per cent of population working in, or with experience in, each of the industrial sectors of the economy (such as agriculture, manufacturing, tourism, retail sales, etc.)	
Per cent of population living within 15 minutes of public transport (bus, train, boat, etc.)	
Number of new business starts in the past 12 months, calculated on a per capita basis	Per cent of new entrepreneurs who grew up on this locality
Potential indicators of the **desired OUTCOMES** of the sustainable livelihoods of individuals within urban or rural communities or regions:	
Life expectancy at birth, for males and females	
Population change, tabulated for specific age groups and by gender (some rural communities / regions wish to stop population decline while other communities / regions wish to stabilize their populations at new, but lower, sustainable population level, while there is another group of rural communities / regions who wish to restrict their population growth from in-migrants);	
Employment rate (per cent of individuals in a given age and gender group, who are employed – in wage work or self-employed or as an unpaid family worker);	
Earned income per worker (1) (by age and gender)	
Per cent of population living in poverty (using the measure of poverty suitable for each country, to determine urban – rural differences)	
Per cent of population, for a given age group, that dies from a preventable cause (e.g., accidents, communicable disease, AIDS, etc.)	

(1) One common indicator for international comparisons is the GDP per capita. This is problematic for sub-national analysis. Many countries do not prepare a sub-national set of national accounts – and most certainly not for rural and urban areas. The ability to correctly assign the earnings of labour and the earnings of capital, let alone the number of workers, to the appropriate sub-national geography is problematic (although admittedly still a popular activity for some). Caution is called upon against placing undue emphasis on the calculation of GDP per capita for sub-national areas.