ANNEX 2:
Defining and measuring rurality

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1.1   Measuring rurality

There are several different definitions of "rural" in common use. Some are "area approaches", typically defining a municipality or county as rural or urban according to its population density and number, whilst others are "settlement approaches" that classify individual settlements as either urban or rural, based mainly on their size. Some of the main approaches have been applied to BiH are as follows:

1.1.1   OECD rural-urban division

This common approach looks at small local administrative units, known as "LAU level 2" or simply "LAU2"; in BiH and most other former Yugoslav republics, this unit is usually referred to as a "municipality". A local administrative unit is classified as rural if its population density is less than 150 people per square kilometre (1.5 people per hectare)[1]. Although simple to apply, this approach is heavily dependent on the size of administrative units; as an example, the capital of neighbouring Montenegro houses around one third of the country's total population but Podgorica municipality is so large that its overall population density is less than 150/km2 and so the capital city is classified as a rural area.

Applying this approach to the latest population estimates for BiH results in 114 of its 142 municipalities being classified as "rural", and defines 60 % of the population as living in rural areas.

1.1.2   OECD 3-way division

The next step in the OECD approach is to look at larger areas known as "NUTS2" units within the EU "Nomenclature of Territorial Units for Statistics"; as a guideline, each NUTS2 unit should contain 800,000 to 3 million people, though this is not always strictly applied[2].

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[1] See http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/local_administrative_units

[2] See http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/principles_characteristics

Using the preceding classification of local administrative units into "urban" and "rural", this step looks at the larger NUTS2 units and classifies them into three groups:

- Predominantly Rural: More than 50 % of the population live in rural areas;

- Intermediate: 20-50 % living in rural areas;

- Predominantly Urban: Less than 20 % living in rural areas.

This approach also takes into account the presence of cities, in the following way:

- A predominantly rural region which contains an urban centre of more than 200,000 inhabitants making up at least 25 % of the regional population becomes intermediate.

- An intermediate region which contains an urban centre of more than 500,000 inhabitants making up at least 25 % of the regional population becomes predominantly urban.

The problem with applying this approach to BiH is that NUTS2 units have not yet been formally defined. The most common approximation for policy purposes is to use the two entities and Brčko District where NUTS2 units would normally be applied, although Brčko District is very much smaller than either entity[3]. Applying this approach to BiH results in BD being classified as "Predominantly Urban", since its single municipality has a population density greater than 150/km2, and both RS and FBiH being classified as "Predominantly Rural" because more than half of their populations live in municipalities with less than 150 people/km2 (the presence of Sarajevo does not change the classification of FBiH since, although the city contains more than 200,000 people, these represent less than 25 % of the total population of the entity). Thus this approach could be applied, but is not of much practical value for making rural development policy.

Therefore some analysts have used a slightly different approach whereby municipalities with less than 50 people/km2 are classified as "Predominantly Rural", those with 50-100 as "Semi-Urban" and those above 100 as "Urban". This approach (with its lower threshold of 100 instead of 150/km2) shows 42 % of the population as living in "Predominantly Rural" and "Semi-Urban" areas.

1.1.3 New Eurostat definition

Recognising the problem of variable-sized municipalities, Eurostat has decided to move to a classification based on the population density of 1 km grid squares, as follows :

- Any grid square with a population density of at least 300 people/km^2 is treated as potentially urban (note the higher threshold compared to the established OECD value of 150/km^2);

- Contiguous potentially urban grid squares are grouped together, and if their combined population reaches at least 5,000 they are all treated as "urban";

- All grid squares not so classified as urban are regarded as "rural".

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[3] See for example the EU-funded Technical Report on "*Analysis of the Availability and the Quality of Data on Western Balkans and Turkey*", www.espon.eu/export/sites/default/Documents/ToolsandMaps/ESPON2013Database/3.2_TR_Neighbourhood.pdf

The practical difficulty with this approach is that much of Europe does not yet have data on this basis, and it will be some time before this approach can be applied to BiH.

It should be noted that a 1 km grid square is much smaller than the administrative units usually used to apply the OECD definition of rurality, and so the new EU approach will give a much finer definition and result in a classification of rural areas that is much closer to the idea of "settlement classification":

1.1.4   Settlement classification

BiH, along with other former Yugoslav republics, classifies each of its settlements as either "urban" or "other". These classifications form part of the national spatial plan, and result in a figure of 60 % of the population living in rural areas.

The Rural Household Survey commissioned to underpin this study applied a very similar approach and drew its sample from non-urban settlements.

FAO also uses a settlement approach in its FAOSTAT database, with a series of ratios applied to identify urban settlements and the remainder of the population treated as rural .

The two approaches can give some quite different results: a village on the outskirts of a big city will usually count as "urban" under an area classification but "rural" under a settlement classification, whilst the main town in a sparsely-populated municipality will usually count as "rural" under an area classification but "urban" under a settlement classification. Which classification is most appropriate depends on the particular aspects of rurality being studied.

1.1.5   Remoteness/accessibility

Some approaches draw a distinction between "Remote rural" and "Peri-urban" areas based on the time needed to drive to the nearest town, with a drive time of less than 30-60 minutes typically classifying an area as "peri-urban" or "accessible" – and being not so dissimilar to the time that many city dwellers need to get to and from work in the rush hour. The OECD typology has been extended to divide "predominantly rural regions" into two:

•   Predominantly Rural Close to a City, where at least 50 % of the population lives within 45 minutes' drive of an urban centre of at least 50,000 people;

•   Predominantly Rural Remote – the remainder.

The Scottish Executive, which has to deal with a large area of very variable population density, uses six different classes including "Accessible small towns" and "Accessible rural".

This approach does not yet appear to have applied systematically to BiH, and the results would depend heavily on the drive time and population threshold selected: much of the population lives close enough to a small or medium-sized town to be able to travel there every day if they have access to a car and are prepared to spend a significant amount of time in travelling, but the towns themselves are often relatively small and limited in opportunities; using the OECD value of 50,000 to define a "city" would capture a smaller proportion of the rural population in this category.

It should also be noted that the BiH administrative structure, with its entities and cantons, means that rural residents cannot necessarily go the nearest town for every purpose, and for things such as education, health care and administrative operations may need to travel a greater distance to the centre that covers their area of residence.

1.1.6 Defining areas eligible for IPARD funding

When defining the allocation of IPA funds between the different components that will affect rural and urban territoriesthe European Commission and the country authorities need to define together the area coverage for both the regional and rural development funds, since in some cases both funds could potentially finance similar activities.

The division is usually territorially based, according to population size. In the case of Croatia and Bulgaria the demarcation has been a municipality population threshold of 10,000 people. Municipalities below this threshold were eligible for local infrastructure investment under IPARD (rural development), while those above this threshold were eligible under IPA component 3 (regional development), independent of their population density or their rural-urban status.

2 The problem

"It is impossible to come up with a single definition of rurality that provides effective targeting of all rural development measures, because the diverse issues that they address are not well correlated with each other."

There are several different definitions of "rural" in common use. Some are "area approaches", typically defining a region, municipality or county as rural or urban according to its population density and number, whilst others are "settlement approaches" that classify individual settlements as urban or rural, based either on their size or on their administrative classification by the national authorities. However, these are not two different ways of measuring the same thing, they measure fundamentally different things.

The two axes of rurality

As a minimum, rurality must be considered along two axes, reflecting these two approaches:

- Rurality of the local environment, most easily measured by settlement size;
- Rurality of the wider area, which can be measured in various ways such as:
  - Population density of the region (the most common measure);
  - Size of the nearest accessible settlement (sometimes also taken into account when using population density to define regions as "rural" or "urban");
  - Total population within a defined travel time.

These two axes give the following most simple matrix:

		Settlement size	
		Small ("village")	**Large ("town" or "city")**
Population density	**Low**	RURAL	???
	High	???	URBAN

Few people would disagree that a small village in a sparsely-populated municipality is rural, or that a city in a densely-populated municipality is urban, but what about a village on the outskirts of a capital city or the main town in a sparsely-populated municipality? Applying the "settlement basis" classifies the former as rural and the latter as urban, but under the "area basis" their classifications are reversed[4i].

Each of these two axes correlates with a different set of factors frequently considered in rural development planning:

- Settlement size may correlate reasonably well with:
    - Significance of agriculture (as an employer, a source of income, or a contributor to household food supply and rural livelihoods);
    - Infrastructure, such as access to piped water and sanitation;
    - Use of wood for cooking and heating;
    - Distance to services such as schools, shops, banks and post offices, health facilities.

- Area measures such as population density &/or size of largest accessible settlement may have a significant correlation with more economic factors such as:
    - Unemployment rate;
    - Wage rate;
    - *Per capita* GDP.

The village on the outskirts of a capital city may have households that grow vegetables, keep chickens, heat with wood, draw water from a well and discharge their sewerage into a septic tank, but employment patterns and wage rates will largely reflect those of the nearby city, since a large share of the population will either commute to work there or sell their goods or services to the urban population.

Conversely, someone living in a first floor apartment in the main town of a sparsely-populated municipality probably has no direct connection with agriculture, heats and cooks with gas or electricity, has mains water and sewerage, but is strongly affected by the employment characteristics of the municipality as a whole.

There may be some correlation between these two axes, for example the share of agricultural employment in a remote village may be higher than in one on the outskirts of a city (because of the lack of alternatives), whilst a peri-urban village may receive mains water and sewerage before a more remote village (because of the lower cost of supply and the greater lobbying power of the inhabitants through their city connections), but overall these two sets of factors are not strongly linked.

Even using these two axes, the correlations between "rurality" and these various factors is weaker than often supposed and, in Europe at least, social attitudes and behaviour seem to have little to do with either axis of rurality.

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[4] The word "urban" derives from Latin *urbs*, meaning city, whilst "rural" comes from Latin *ruralis*, meaning countryside, so the original logic applied the settlement basis. Redefining the word "rural" to apply to whole regions with low overall population density has perhaps been the source of the current confusion.

Towards a better definition and terminology

It is simply impossible to produce one urban-rural definition that does justice to these two different axes, and the very use of the terms "rural" and "rurality" is a source of much confusion, encouraging people to build an inaccurate rural stereotype and to bundle together factors that are not in fact correlated.

If people are to use the term "rural" as a form of classification, then it should always be qualified as meaning either "rural areas" or "rural settlements". The term "rural population" should be avoided, as it is very imprecise.

The situation in Bosnia and Herzegovina could perhaps be best described by the following 6-way split:

		SETTLEMENT SIZE AXIS		
Proposed label:		**Village**	**Town**	**City**
Proposed definition:		All settlements not classified as "urban" (i.e. *gradsko naselje*).	All settlements classified as "urban" but having less than 100,000 people.	All settlements of 100,000 people or more (which may span municipality or entity boundaries).
REMOTENESS AXIS* Largest accessible settlement (within 1 hour's drive) is a:	**Village**	A		
	Town	B	D	
	City	C	E	F

*The Remoteness Axis corresponds roughly to the "area basis" and the concept of overall population density, but may prove a better predictor of economic factors. The definition of "accessible" needs further consideration, looking at the travel time to use, whether it should be calculated for a private car or by public transport, in summer or in winter, and the situation where the largest nearby settlement is in another administrative region.

Cells in grey cannot, by definition, exist (e.g. the largest accessible settlement to a town cannot be smaller than a town, since the town is accessible to itself).

- The first set of factors (agriculture, infrastructure, services) largely follow the "Settlement Size Axis" with the step change taking place between "Village" and "Town" (i.e. cells A, B & C share the same characteristics).
- The second set of factors (employment etc.) largely follow the "Remoteness Axis", with the step change taking place between "Town" and "City" (i.e. cells C, E & F share the same characteristics).

Adding these factors to the diagram gives the following:

		SETTLEMENT SIZE AXIS		
Proposed label:		**Village**	**Town**	**City**
Proposed definition:		All settlements not classified as "urban" (i.e. *gradsko naselje*).	All settlements classified as "urban" but having less than 100,000 people.	All settlements of 100,000 people or more (which may span municipality or entity boundaries).
REMOTENESS AXIS Nearest accessible settlement is a:	**Village**	A		Likely to have: • Higher unemployment • Lower wages • Lower *per capita* GDP
	Town	B	D	
	City	C	E	F

Likely to have:
• Lower unemployment
• Higher wages
• Higher *per capita* GDP

Inhabitants more likely to:
• Be involved in agriculture
• Cook &/or heat with wood
• Use local water supplies & sanitation
• Live far from services

Inhabitants more likely to:
• Have no involvement with agriculture
• Cook & heat with electricity or gas
• Have piped water & sanitation
• Live near to services

This diagram leads to some immediate policy conclusions:

- Rural development measures such as agricultural improvement, farm diversification and agri-tourism are of almost no relevance to people living in towns (middle of Settlement Axis) even if they lie towards the rural end of the Remoteness Axis (cell D).

- Actions to improve access to services should focus on villages (rural end of Settlement Axis), wherever they lie on the Remoteness Axis (cells A, B & C).

- People living close to cities (urban end of Remoteness Axis) are not priorities for economic development measures, even if they live in villages (rural end of Settlement Axis).

- Economic development measures should instead address the needs of people living in both villages and towns (rural end and middle of Settlement Axis) that are far from cities (middle and rural end of Remoteness Axis) (i.e. cells A, B & D) – though this does not automatically mean that the measures should seek to develop jobs in villages.

Next steps

This proposed typology has been developed by piecing together a story from many different datasets, none of which was structured in this precise way. To test the theory it would be necessary to get low-level survey data on a wide range of indicators used in rural development planning (covering agriculture, infrastructure, services, income and employment), classify each respondent on both axes and see how well the model fits. Information on where respondents work, as well as where they live, would help greatly in improving the model and refining the definitions.

If the model appears to be of value for Bosnia and Herzegovina, it should then be tested in other countries, initially in the region and then further afield.

Finally, it will need some better terms than "A" to "F"!

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[i] The word "urban" derives from Latin *urbs*, meaning city, whilst "rural" comes from Latin *ruralis*, meaning countryside, so the original logic applied the settlement basis. Redefining the word "rural" to apply to whole regions with low overall population density has perhaps been the source of the current confusion.

This may stem from the OECD approach of classifying LAU2 administrative regions (e.g. municipalities) according to a population density threshold of 150 people/km^2, thereby applying the same category to the whole population of the municipality, whether they live in villages, towns or cities. At the next stage up, the OECD definition classifies whole NUTS2 regions into "Predominantly rural", "Intermediate" and "Predominantly urban" according to the proportion of the population living in rural municipalities.

A better approach might have been to keep the original meanings of "urban" and "rural" as meaning town and countryside, and then to classify areas (LAU2 and NUTS2) into "Predominantly rural", "Intermediate" and "Predominantly urban" according to the proportion of their population living in urban settlements. This would create consistency between the "area approach" and the "settlement approach", as well as continuing to use the words with their original meanings.

The new EU approach, based on contiguous groups of 1 km grid squares, applies an area definition but, because of its fine resolution, will result in a classification very similar to the settlement approach (i.e. when this new approach is applied, many OECD rural regions will be reclassified as urban, and *vice versa*).