IPC Integrated Food Security Phase Classification

Note # 2

ECONOMIC RESEARCH GROUP

Chronic Phase Analysis

Review of Framework and Proposed List of Indicators/ Time Series Data

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I Introduction

This note is in fulfillment of the second obligation of Economic Research Group to FAO under the agreement on "Integrated Food Security Phase Classification in Asia: special focus to strengthen IPC capacity in four countries", LOAFAOBGD-2012-032. A part of this note, dealing with the framework, was submitted previously on 14 November 2012. This has been extended to allow for skipping the prototypes and adhere to the basics – that is, the four phases of chronic (level) analysis proposed in the IPC Technical Manual Version 2.0. The note further elaborates on the steps for chronic phase classification and proposes the indicators/variables to be chosen for the analysis.

It is recognized that the choice of indicators for phase analysis critically depends on availability of data or ease in defining those for future collection of relevant data. A brief on availability of data was therefore submitted earlier. The constraints due to data non-availability will be further pursued while proposing possible indicators (Section IV), following a review of the general framework of chronic analysis (Section III) and an outline on the approach to be adopted in this exercise.

II Review of Framework

The food insecurity phase analysis is articulated in the IPC Technical Manual. The IPC distinguishes between two conditions of food insecurity – acute and chronic – in classifying geographic regions or population segments. The Version 2.0 updates the current consensus on acute analysis and outlines the framework of chronic phase analysis in an Annex (# 5). There are two distinct threads in the latter analysis presented in that Annex – one outlining the three broad types of chronic food insecurity; and the other dealing with four levels in the reference table to guide medium and long term objectives. There is clearly a disjuncture between the 'type' and 'level' analyses. Before returning to *status quo*, we critically review some of the issues around the two threads separately.[1]

II.1 Perspectives on the relations between Acute and Types of Chronic IPC

The phase classification under acute analysis provides a snapshot of the current (or projected/anticipated) severity of the (food insecurity) situation. While the classification is independent of the causes, context or duration; *ex post* exercises are undertaken on causes and context analysis. The current phase classification does not attempt to assess the relative standing of the subject (say, a geographic region) vis-à-vis the subject's historical norm. In stead, there is a minimum degree of food security (and thus, a degree of food insecurity)[2] commonly perceived by the development practitioners (who are

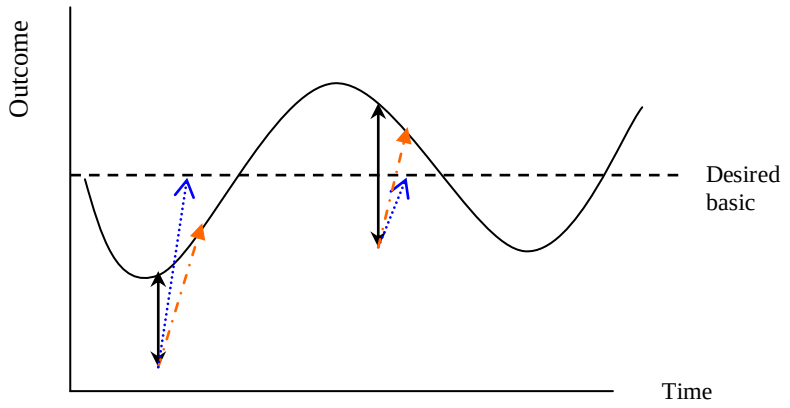
[1] The Manual is open to new ideas from country-level actors when it states: "The tools for classifying chronic food insecurity are still in prototype form. Countries and agencies are encouraged to use the tools and provide feedback on how they can be developed further." (p. 81)

[2] Mathematically, the sum of the two is implicitly considered a constant.

steering the IPC process); and thus, the phases are defined in terms of deviations from that basic minimum.[3]

Figure 1 provides a hypothetical case to illustrate current perspective within acute analysis and how this may be improved to modify perspectives on chronic analysis (types) proposed in Annex 5. The curved line may be read as the time path of the level of food security in a given region – the variations may be read as seasonal or cyclical. One may also consider a segment (the phase on the left segment in the Figure covering one amplitude) to represent regions with different levels of food security. In the absence of an additional shock, acute analysis would capture points on the curve. With shocks, the outcome variables deviate (below in the Figure) from the historical path. Two extreme cases are illustrated in Figure 1: (i) in cases of negative shocks during times of cyclical trough and/or slack seasons, one may over-estimate the size of required intervention if a given reference is targeted; and (ii) under-estimate the needs in cases of shocks during periods of booming economy and/or otherwise peak seasons.

Figure 1: Illustration to relate Acute and Chronic



Note: ↔ size of damage caused by shock that will get reflected in acute analysis;
Size of intervention needed to return to desired basic minimum; and
Size of intervention needed to return to the historical path that may be non-linear.

Normally, IPC acute analysis is meant to guide actions during periods of crisis and disasters (emergency and famine). Past experiences called for common languages in the field that would enable not only quick assessments but also comprehensible figures on needs. Since existing humanitarian assistance was accounted for in phase classification, the acute analysis is meant to identify the additional actions over a very short term. The chronic analysis clearly departs in purposes, thus calling for redefining space over which phase classification may be done. The prototype tools ('types' of chronic analysis) proposed in Annex 5 of the TMV 2.0 suffers from ambiguity in defining a state of chronic food insecurity: (i) chronic is defined to be associated with "conditions of

[3] One may note that under each indicator, variations in scale normally distinguish the five phases - none, stressed, crisis, emergency and catastrophe.

persistent inability to meet minimum quality and quantity of food consumption requirements as is evident even in the absence of a shock/hazard"; AND/OR (ii) defined in terms of the "frequency of acute crisis years in the past ten years". It is proposed that we stick to the former while linking 'types' of chronic analysis with acute analysis, and account for frequency when 'levels' of chronic analysis is addressed (see below).[4]

The IPC identifies three types of chronic food insecurity, but refrains from considering those as mutually exclusive. Annex 5 further notes that "these types of chronic food insecurity can co-exist" (p. 81), thus allowing for six possible combinations. The current definitions however suffer from inadequate clarity on the three concepts of time – seasonal, cyclical and periodic. Perceived as a time series of a single variable, seasonal is periodic within a year; while cyclical is generally considered periodic over several years. In time series analysis, it is a common practice to differentiate between seasonal and cyclical; and it may not be appropriate to treat those two synonymously. While shocks are not perceived to follow systematic patterns, events such as floods and cyclones (natural disasters) as well as financial crisis/depressions are commonly perceived periodic. Without further elaboration, Table 1 proposes classification of chronic situation into six distinct phases that are in line with the prototype proposed in Annex 5.

Table 1: Plausible Chronic Phase Classification and their relations with Acute Phases

IPC-TMV 2.0 classification	Proposed	Type of Chronic Analysis	IPC Acute Phases				
			1	2	3	4	5
Not noted	I	No/Minimal	√				
Type 1	II	Seasonal/but OK annually*					
Type 2	III	Not OK annually (seasonal or no seasonal)*					
Type 3	IV	Periodic/cyclical (regular)				√	
	V	Periodic/cyclical + seasonal				√	
	VI	Perennial (seasonal or no seasonal)				√	

Note: * A season is assumed to cover less than three months; and without shocks, a geographic region is perceived to face at most a stressed situation (phase 3 under IPC acute analysis). Shaded multiple cells identify all plausible Acute phases that may conform with the corresponding Chronic Type classification.

II.2 Beyond the Prototypes: Levels of Area-based Chronic Food Insecurity

The Technical Manual does not end in proposing plausible types of chronic food insecurity, but moves on to charting the levels along lines similar to the acute analysis. One may read the compact presentation in Annex 5 to suggest two tiers of phase classification: at first, one characterizes the type of chronic food insecurity of a geographic area or of a population segment; and subsequently, (and independent of the previous analysis on types) attempts are made to assess the level of chronic food insecurity along the logic of acute analysis. For obvious limitations, the assessment of

[4] IPC appears to be open on the subject, as reflected in the following statement, "An area can be in a varying level of Chronic Food Insecurity and simultaneously have varying Phases of Household Acute Food Insecurity." (p. 81)

levels ought to rely on annual data. In doing the latter, as noted earlier, ambiguities surface due to practical difficulties to separate the frequency of 'acute crisis years' and 'conditions of persistent' food (in)security in the absence of shocks. This is further explained below.

Discussion in the TM is largely pursued on phasing 'levels' of food insecurity. At an operational level, the steps suggested in the Manual may be recast as follows:

- undertake the acute analysis of a given area (district in case of Bangladesh) for each of the years over, say, a ten years period;
- drop all the years during which the area is phased as 3, 4 or 5;
- get an average for other ("normal") years on percentages of households in the area considered food insecure;
- use the latter[5], along with some notional measure of frequency[6] of acute food security crisis over the ten years period,

It is important to note that the exercise defines Chronic Level Phase to be an average picture of Acute Phases during 'normal' years, which fails to capture the 'structural' elements supposedly embedded in a concept of chronic food insecurity. While it is urged that the global IPC team revisits the aforementioned issue, we proceed below to outline the options and the operational derivations of Chronic Level Phases from Acute Phasing analysis.

Acute crisis is understood to imply presence of more than 20% of population with (high) food consumption gaps (without resorting to accelerated depletion of livelihood assets) or marginal ability to meet the minimum food requirement with accelerated depletion of livelihood assets.[7] Since the four levels of chronic food insecurity are also defined in similar scales of food deprivation, Table 2 below attempts to relate chronic and acute levels of food insecurity. For a period of 10 years, occasional implies 2 to 3 times, frequent is defined here as 4 to 5 years, while very frequent is anything that involves occurrence in more than 5 years. For a country like Bangladesh, frequency of 'No' is assumed to include a maximum of one crisis year.

The approach one may therefore take is as follows:

- for each of the year, phase a geographic area;
- If acute crisis is found to have occurred very frequently (more than 50%), the choice is obvious. The same roughly applies for places where acute crisis occurs frequently.
- The proposal of dropping acute years generally applies for not-so-frequent cases of acute crisis. That is, in case of acute crisis for 3 or less years out of 10, one may leave those years for getting an average picture in non-crisis years. One however

[5] Chronic food insecurity is considered low if the percentage of food insecure households is less than 10, medium if 10-20, high if 20 – 40 and very high if the percentage is more than 40.

[6] Four alternatives for frequency are identified: no, occasional, frequent and very frequent.

[7] The definition calls for triangulated information on food consumption and changes in livelihood assets. At times, considering 'acute malnutrition' as a close substitute of inadequate food consumption raises further intricacies in the absence of a unique relation between the two.

needs to assess if the performance during non-crisis years depends on the occurrence of crisis years. An example of non-zero variance is the occurrence of floods in one year having positive influence on crop production in subsequent years.

- One may trace annual acute phases over a period (say, 10 years) to suggest on periodicity, an element of type-focused analysis. However, such data cannot address the seasonal dimension, and therefore, no comprehensive assessment may be made on the chronic types from the acute analysis.

Table 2: Tentative Relations between Frequency of Acute Crisis and

Level of Chronic Food Insecurity	Frequency of Acute crisis (>20%)			
	No <0-1>	Occasional <2-3>	Frequent <4-5>	Very frequent <5+>
Low (<10%)		if NAFI<10%		
Medium (10-20%)		If NAFI=10-20%		
High (20-40%)				If AFI = 20-40%
Very high (>40%)				If AFI > 40%

Note: AFI=Average of Food Insecurity measures for all ten years; NAFI=Average of Food Insecurity measures for years with no Acute Crisis.

III Basic Approach to IPC Analysis and Indicators

Based on the discussion in the preceding two sections, it is proposed that the type of chronic phase be done independent of the level analysis. Given the IPC articulation of chronic food insecurity that is yet to incorporate structural issues, the focus remains largely on acute analysis and the IPC analytical framework remains the primary entry point to selection of indicators for phase analysis. Thus, the latter is briefly narrated below before proceeding to discuss the indicators proposed to be used for Bangladesh's chronic food insecurity analysis.

A. The IPC framework considers two sets of outcomes:
(i) Food consumption (quantity and nutritional quality) and livelihood status (assets and strategies); and
(ii) Nutritional status and Mortality.

B. There are two sets of factors presumed to contribute to shaping these outcomes:

B.1 Non-food security specific:

- disease
- Water/Sanitation
- Health Social Services
- Others

B.2 Food security related:
- Availability: Production, wild foods, food reserves, markets, transportation;
- Access: physical, financial and social;
- Utilization: food preference, food preparation, feeding practice, food storage, food safety and water access.

C. The food security dimensions (B.2) are assumed to be caused by two sets of factors:
C.1 Causal factors (where the IPC report remains vague): vulnerability is emphasized, with three additional aspects – livelihood strategies, livelihood assets, and policies, institutions and processes.
C.2 Acute events: natural, socio-economic, conflict, disease and others.

For all practical purposes, actual phase analysis is based on the outcomes listed in 'A' above. One may resort to the contributing factors (B) to derive proxies when outcome variables are missing. An understanding of the causal factors that influence outcomes is called for only in the context of assessing future situation, when expectations/projections are at work. Current formulation, rooted in acute phase analysis, is more appropriate to generate simulated outcomes under alternatives scenarios involving different paths for the exogenous variables (causal factors). It is suggested that such an approach fails to address the 'structural' issues generally presumed to underlie chronic food insecurity in a region; and therefore, attempts have been made at the end to un-bundle some of the causal factors along 'structural' issues.

IV Proposed Approach for Chronic Food Insecurity Phasing and Suggested Indicators

Chronic phase analysis is intended for 64 administrative districts in Bangladesh, on the presumption that adequate data will be available for each of those districts. As mentioned earlier, characterization of 'Type' will partly follow from analysis of seasonal data and partly from the annual series. More importantly, no attempt will be made to link the type-characterization with the phasing of levels of chronic food insecurity. Some of the key sources of data by years of their availability are summarized in Table 3.

IV.1 Suggested Indicators for Chronic Type Classification

One may note that the 'types' defined in the TM are not mutually exclusive; and therefore the authors of Version 2.0 opted to accommodate multiple identities of a single geographic area (or population segment). Two key questions may guide the search for 'types': (i) does food insecurity in an area, reflected in outcome variables, exhibit seasonal pattern? More precisely, does crisis come only during certain seasons every year? If so, what are the underlying factors?; and (ii) does food insecurity in an area exhibit discernible cyclical pattern? If so, what are the underlying factors? Thus, at outcome levels, there may be four types (YY, YN, NY and NN)[8]. One may further disaggregate by linking broad factory types that cause any pattern.

[8] Y stands for 'yes' and N for 'no'. The first letter stands for seasonal and the second stands for cyclical.

District-level data available in Bangladesh are mostly annual. Thus, seasonality at the district level will be captured by:

- average monthly foodgrain price data;
- average monthly wage data;
- average cropping pattern of each district, supplemented by per capita production of staple food;
- Relative size (share) of agriculture in the local economy;
- HKI data on malnutrition for selected areas;
- Seasonality in per capita consumption as reflected in HIES data (for four quarters);
- Estimated monthly inflow of remittance;[9]
- Monthly disbursement of cereals from PFDS (as a proxy).

Periodicity is considered synonymous with regular recurrence of acute crisis, originating from market and non-market sources (see discussion in next sub-section). The former is more of a national phenomenon; and the latter will be assessed by following indicators:

- Annual area and production damage due to flood, by crops;
- Annual average yield of rice;
- Annual average per capita consumption of cereals in the three HIES years (2000, 2005 and 2010) – though nothing of substance may be inferred on periodicity;
- Estimated annual inflow of remittance;
- Annual per capita disbursement of cereals from PFDS (as a proxy).

The Type Phasing will only characterize a district having seasonal crisis or not; and if there are cyclical elements in the performance of the economy and/or in recurrence of crisis.

IV.2 Suggested Indicators for Chronic Level Classification

Discussion below on indicators is structured in line with the broad groups indicated in the Technical Manual. The period to be covered is from 2000 till 2010. Most indicators however need population as base (denominator) figure – thus, we begin with it.

Population: 2001 and 2011 Population Censuses provide the base figures. Those from SVRS will allow one to generate an acceptable annual series. However, such data should ideally be obtained from the BBS to avoid possible deviations from 'official' claims. Some of the background variables to be addressed from SVRS and Population Censuses are: birth, death, fertility, mortality, migration.

Food consumption: Percentages of food insecure households with cut-offs defined at 2,122 Kcal/p/day. For each geographic region, three figures from HIES 2000, 2005 and 2010 will be availed. More acceptable district figures are to be generated for the three

[9] National level figures on remittance are available, which may be used to cross-check if it helps to reduce natural periodicity or aggravates it.

years ensuring consistency with (statistically reliable) division and zone-level estimates. National food balance data, times series on national income, along with (annual) average district-level price and wage data will be used to generate time series on district-level percentages of food-insecure households. In addition, percentage of income spent on food (by the poorest quintile) will also be used to cross-check.[10]

Quality of consumption: Two measures to be used – (i) share of cereal in total food expenditure; and (ii) dietary diversity captured by percentages of food expenditure spent on major food groups (amongst food insecure households),

Nutrition: Primarily MICS (2000, 2003, 2006 and 2009) will be used – underweight and stunting for children, BMI for adult, and micronutrient deficiency (including anemia prevalence). BDHS provides information for several non-MICS years; however, those are only representative at division levels. One may compare division-level estimates from the two sources and adopt ways to generate the annual series that are missing from MICS data.

Change in Assets: Figures on productive assets (land, water body, agricultural equipment, etc.) obtained from HIES 2000, 2005 and HIES 2010, will be used to obtain changes for poor and non-poor households. These estimates are to be adjusted with migration figures.[11]

Recurrence of Acute Crisis: Three major sources of crisis will be looked into:

(i) disruptions in production arising from natural calamities, such as, flood and drought;
(ii) disruptions in general livelihood (housing, livelihood assets and general living) from natural disasters, such as, storms; and
(iii) sudden shocks from markets causing depletion in income (remittance or local sources) and/or real purchasing power (price increases).

Indicators/variables on which information will be compiled are:

(i) area affected and output damaged; occurrence of events;
(ii) number of people affected and number of days, occurrence of events;
(iii) Output market: rice price; Labor market: wage rate; and for Financial market: in the absence of district level on capital market engagements, we rely on loan recovery statistics to be derived from lending, recovery and outstanding figures.

Selected Structural Indicators

Potential of local economies (within the geographic perimeter of administrative districts) to enable all households residing within a district are constrained by the availability of local resources (i.e., various types of capital) and the market and power relations that

[10] It is expected that food insecure households would spend most of their income on food.
[11] Assets are often sold to finance investments for future returns, such as, on out-migration and children education. Thus, changes in asset ownership need to be carefully interpreted.

shape the nature (and distribution) of access and utilization. In order to initiate the inclusion of more substantive structural issues in (interpretation of) chronic phase analysis, selected indicators are suggested below.
Suitability of land for crop production: Percentages of land under various crops/crop groups, in addition to various agro-ecological characteristics that shape the final outcomes on crop choice.

Capital in agriculture: net cropped area per person, cropping intensity, area under various modes of irrigation, percentage of rice area in gross cropped area, percentage of HYV in total rice area, major agricultural equipments per cropped area and/or percentages of cropped area (or farmers) under mechanized cultivation, number of livestock per household (or, per person), inland fish production per person.

Ownership distribution of resources: agricultural land, access to credit, access to remittance.

Economics structure: Percentage of household income from non-agriculture sources; percentage of household income from remittance, distribution of labor force by sectors..

Other supply side constraints: health facilities (# of facilities, # of qualified practitioners), water (arsenic level and sources of safe drinking water); sanitation (access to sanitary latrines), education (# of facilities, # of students, # of teachers), food storage (public storage and private milling capacity).

Other demand side/market access constraints: economic exclusion (per capita income, general price level); physical/distance exclusion (physical infrastructure - length of various types of communication – roads, railway and river transport; and traffic movements); percentage of household with electricity, social exclusion (% of minority population).

Converging to Chronic Level Classification

Once the data are compiled, chronic phase classification will follow the general prescription in the TM V.2 under the level description. One may note that the latter confines to the outcome variable on food insecurity and recurrence of acute crisis. Information on other outcome variables are meant to corroborate the initial identification. An index with differential weights may be attempted once the data are compiled. The classification may be further fine tuned by including the dimension of structural causes if any systematic pattern is observed.

Table 3: Key data sources and their availability by years

Year	MICS	BDHS	HIES	Popula-tion Census	Agriculture Census	SVRS	Production Price, and Wages	Depart-ment / Others
2000							Monthly	
2001							Monthly	
2002							Monthly	
2003							Monthly	
2004							Monthly	
2005							Monthly	
2006							Monthly	
2007							Monthly	
2008							Monthly	
2009							Monthly	
2010							Monthly	
2011							Monthly	
2012							Monthly	

Note: MICS = Multi Indicator Cluster Survey; BDHS = Bangladesh Demographic and Health Survey; HIES = Household Income & Expenditure Survey; SVRS = System of Vital Registration Surveillance.
Production, Prices and wages will be monthly and provide seasonal variations.
Details on sources of department data may be found in the first note submitted on data sources.
Others include: Labor Force Survey (LFS), VAM data from small area estimations,