

## Chapter 2

# Conceptual Frameworks for the Analysis of Food Security

**Abstract** This chapter illustrates six conceptual frameworks suitable for identifying the information to be collected for the elaboration of appropriate indicators to assess the food security status and its features. The neoclassical framework investigates the different typologies of food deficit at the macro-level. Two other frameworks are presented as examples of conceptual structures that can be adopted for the identification of the causes of the individual and child malnutrition. One is mainly used in the academic literature and the other has been designed by UNICEF for the purpose of programming at the national, district, and local levels. Afterwards, the basic elements of the Sustainable Livelihood Approach and the Household Economy Approach are presented as livelihood-based frameworks. The first framework examines the influence of macro-level policy and institutions on household livelihood options, whereas the second is an instrument to predict short-term changes in the population's access to food to realize more effective decision making. The Resilience Index Measurement and Analysis Model is the last presented framework. It is used to investigate the household resilience to food insecurity. At the end of this chapter, the reader will be able to understand the standard elements of different conceptual frameworks for analysing food security.

## 2.1 Introduction

Assessing food security at the national, sub-national, household, or individual level requires a conceptual framework that defines the information to be gathered to quantify appropriate indicators. To this end, this chapter presents six conceptual frameworks for the investigation of different aspects of food security. A paragraph is dedicated to each of these frameworks. The objective of this chapter is not to provide definitive answers and guidelines. Instead, it is intended to stimulate readers to reflect on the basic aspects of the various approaches. For a comparison and critical analysis of the investigation of food security, see, for example, Burchi and De Muro (2016).

Section 2.2 presents a typical neoclassical framework used to describe different types of food deficits that can be addressed by specific policy measures at the macro-level.

Section 2.3 discusses a conceptual framework that emphasises the links between the basic pillars of food and nutrition security at the individual level, while Sect. 2.4 the framework designed by the United Nations Children's Fund (UNICEF) as a tool for providing information on the causes of child malnutrition by assessing, analysing, and acting to improve the nutritional status of children.

Another group of conceptual frameworks provided by the literature are livelihood-based (for a comparison, see Carney et al. 1999). In this chapter, we analyse two of them: the Sustainable Livelihood Approach in Sect. 2.5 and the Household Economy Approach in Sect. 2.6.

According to the Sustainable Livelihood Approach, food security is one of the possible livelihood outcomes. This conceptual framework presents the main factors affecting household livelihoods and the typical relationships between these factors (DFID 2001).

The sustainable livelihood framework is an outgrowth of the Household Economy Approach. The Household Economy Approach has been designed as a livelihood-based framework in accordance with Amartya Sen's theory of exchange entitlements; this approach is a tool used to predict short-term changes in the population's access to food (Seaman et al. 2000; Holzmann et al. 2008).

Section 2.7 focuses on the conceptual framework for measuring food security resilience. The literature proposes several structures. They differ with respect to their purpose, scale, focus, and method of analysis (for a review see, for example, Sturgess 2016). In 2008, the FAO designed a resilience framework, the Resilience Index Measurement and Analysis Model (RIMA-I), which evolved into RIMA-II in 2015. We illustrate the conceptual framework at the heart of this approach, which is today applied in several empirical investigations.

The references to empirical studies in the literature clarify the possible application of each framework.

## 2.2 Food Insecurity Within a Neoclassical Framework

At the country level, a food economy can be described within a neoclassical framework based on the concepts of food production, supply, demand, requirements and prices.

Considering an open and price-taker economy, given a prevailing food market price,

- Food production is the volume of food produced domestically both for sale on the market and for subsistence;
- The total food supply incorporates food production for the domestic market and exports, modified by stock changes and food imports;

- Food demand includes the effective market demand and home consumption from subsistence production;
- Food requirements consist of the energy required for growth, as defined in the first chapter.

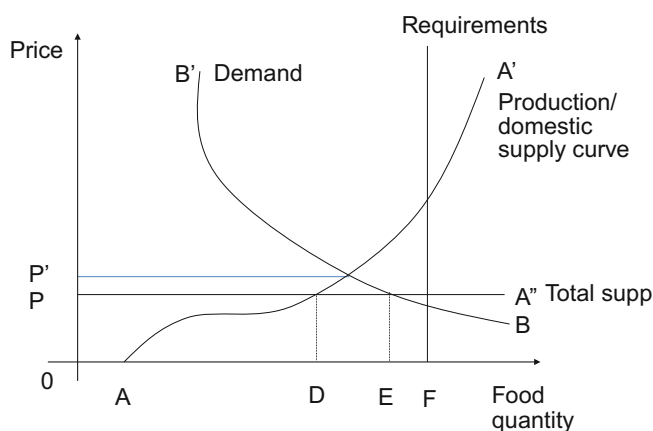
Within this framework, food security is a situation in which, at a certain market price, food supply and demand are sufficient to meet food requirements on a continuous basis. When this condition is not achieved, a food deficit emerges. More precisely, four types of food deficits can be characterised:

- A production deficit, when food production is unable to meet food requirements. As the balance can be reached through imports, this deficit is not necessarily an indication of food insecurity;
- An import deficit, when market production is lower than effective demand;
- A supply deficit, when the total food supply is insufficient to meet requirements, i.e., food supply insecurity exists;
- A demand deficit, which expresses the imbalance between effective demand and requirements and describes a situation of insufficient income and purchasing power that does not allow people to express their food requirements as effective demand.

These concepts related to food deficits are illustrated in Fig. 2.1, where the horizontal axis represents the quantity of food and the vertical axis represents the price.

The production curve, labelled  $AA'$ , shows the amount of aggregate food production that farmers are prepared to produce at varying food market prices. At the world market price  $OP$ , food production is  $OD$ . The segment  $OA$  is the volume of subsistence production.

The total supply curve, labelled  $AA''$ , is the quantity of food that farmers are willing and able to sell at different prices. Up to  $OP$ , the point where the domestic



**Fig. 2.1** Types of food deficits in an open and price-taker economy

market price reaches the level of the world market price, the total supply curve is identical to the production curve. Beyond this point, the supply curve flattens, becoming parallel to the horizontal axis. The curve is perfectly elastic because of the assumption of a price-taker economy in the world market.

The demand curve, labelled  $BB'$ , shows the amount of food that consumers are willing and able to buy at different prices. The shape of the curve depends on the price elasticity of demand, which affects the intensity of the impact of a price change on the real income and, in turn, on the number of households able to express their food needs as effective demand. At the world market price  $OP$ , the volume of food demand is  $OE$ , and  $DE$  represents food imports.

The food requirement  $OF$  is the appropriate amount of energy intake from food in the economy.

In Fig. 2.1, the production deficit amounts to the segment  $DF$ . In fact, food production  $OD$  is less than the food requirement  $OF$ . The segment  $EF$  represents the demand and supply deficit, i.e., the difference between food requirement  $OF$  and total food supply or demand  $OE$ . The segment  $DE$  measures the import deficit, which is the gap between effective demand  $OE$  and market production  $OD$ .

This framework can be adopted to understand the implications of the changes in the parameters and in the variables based on the analysed curves resulting from the process of development or from the introduction of specific policy measures, especially at the macro-level.

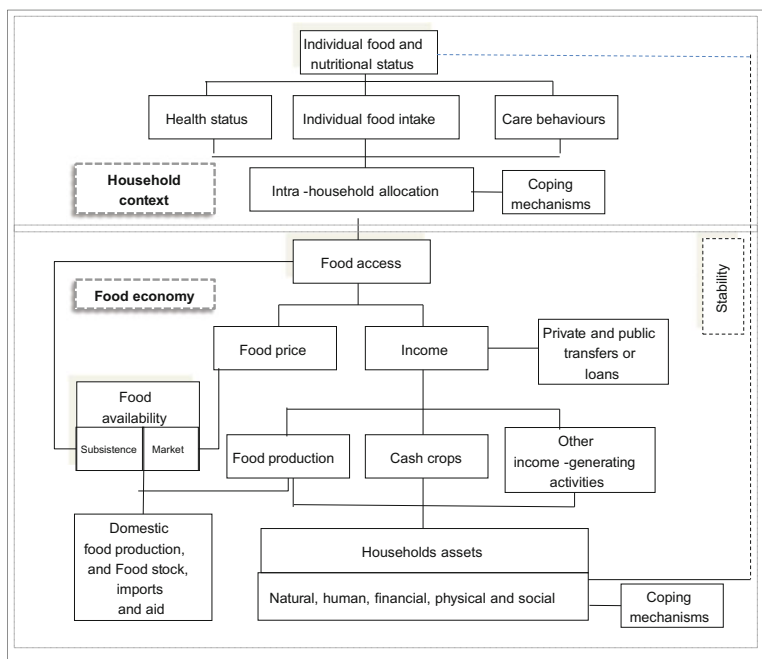
## 2.3 Framework for the Analysis of the Links Among the Individual Food and Nutrition Security Pillars

This paragraph introduces a framework that links the basic pillars of food and nutrition security at the individual level, which is useful in informing policymakers' focus on the design of appropriate food security interventions.

Following Sassi (2015a, b), Fig. 2.2 highlights the possible pathways through which a certain food and nutritional status is achieved at the individual level. The framework consists of three blocks: the food economy, the household context, and the confounding factors.

At the bottom of the food economy part of the diagram, the household's assets consist of five forms of capital: natural, human (labour force and knowledge), financial, physical, and social. This resource endowment defines the set of productive activities that a household can pursue to realize its needed income. The income from these activities, integrated with public and private transfers or loans, determines the household's total income availability. The household's assets can also be sold to cope during periods of short-term food insecurity.

Household activities may include food production, cash crop production, and non-agricultural activities. The food produced can be partly consumed for subsistence and partly sold on the market, where the food price is set. These two parts of



**Fig. 2.2** Food security conceptual framework. *Source* Adapted from Sassi (2015a, b)

the household's production contribute to food availability in combination with domestic food stocks, commercial food imports, and food aid.

Food availability influences the food price, which determines the market purchases that the household can support with its income.<sup>1</sup> Food access depends on the food consumption level.

Household food access does not directly influence individual food and nutritional status. The latter depends on the household context. In fact, individual food and nutritional status depends on three major factors: intra-household dynamics, which affect the distribution of food within the household; health status; and care behaviours. These aspects are also affected by the coping strategies that households adopt to deal with insufficient food access in the short term. These strategies include eating less preferred food, limiting portion size, or skipping meals. Turning to the intra-household distribution, Pinstrup-Andersen (2009) indicates two reasons why household food security may not assure food security for all its members: the ability to acquire sufficient food may not translate into actual food purchases, and the allocation of food among household members may not be based on the needs of each member.

<sup>1</sup>The purchasing power of a household relative to the price of food is also called food affordability.

Food and nutrition security is a dynamic concept. It has a feedback effect on human resources affecting labour productivity and the potential to earn household income. This effect introduces the dynamic aspect of food security, which is represented by its stability pillar.

Finally, the confounding factors frame the diagram. Confounding factors are those outside the control of interventions. They may include the following:

- The physical environment, which consists of factors with a direct effect on the type of activities that households can undertake, particularly in rural areas, including weather and soil conditions;
- The policy environment, which embraces government and local policies that influence the agricultural sector because they stimulate or discourage food production or, more generally, the mechanisms governing when, where and how food can be accessed by households; and
- The social environment, including aspects such as cultural attitudes, social institutions, the livelihood system, household characteristics, and the level of education. For example, the existence of strong pressure groups may lead to wide swaths of the population being excluded from programme benefits.

According to the described framework, development projects aimed at affecting food security can be classified as interventions that are designed to improve the following:

- The overall social, policy, and physical environment, which includes the environmentally sustainable management of natural resources (soil, water, and forests), the setup of an appropriate institutional environment for the agricultural private sector, the introduction of adjustment or macroeconomic policies, and the strengthening of farmer associations;
- The level of and return to resources, which includes interventions in the field of education, research and development (R&D), and the provision of credit;
- The return to activities, such as those in rural infrastructures;
- Health care and nutrition practices and health status, for example, through better access to health services and drinking water.

The link between these interventions and food security at the household and individual levels is sometimes weak due to the existence of several constraining factors. Among these elements are the counterbalance effects exerted by factors not affected by the specific programme implemented and the lack of participation by beneficiaries (Hoddinott 1999). Therefore, the described food security conceptual framework provides only a priori information on the possible impact of interventions on food and nutritional status. For a deeper analysis, the strength of these links should be better understood.

An application of the described framework can be found in two papers by Sassi (2012, 2015a), where the framework is used to select the explanatory variables for child malnutrition in the Malawian regions and in the Dowa District of Malawi. These papers reveal the complex nature of child malnutrition in the investigated

areas and the importance of adopting a food and nutrition security approach in understanding and addressing the issue. The adopted perspective shows that child malnutrition is a chronic problem that is exacerbated by transitory food insecurity.

## 2.4 Framework for the Determinants of Child Malnutrition

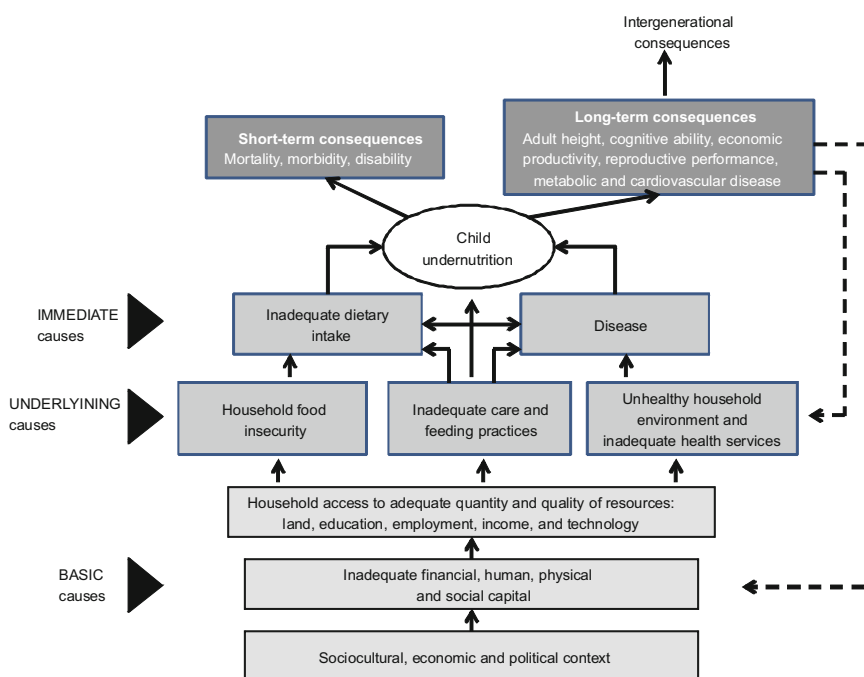
The conceptual framework designed by UNICEF highlights the multifactorial determinants of child undernutrition (Fig. 2.3).

This tool is used for programming at the national, district, and local levels. It is designed to guide the assessment and analysis of the causes of child nutritional status and to identify the most effective multisector actions (UNICEF 1998).

The framework organises the causes of child undernutrition into three levels:

- Immediate causes, operating at the individual level;
- Underlying causes, affecting households and communities;
- Basic causes, acting on the structure and processes of entire societies.

The immediate causes of undernutrition are the result of diseases, a lack of dietary intake, or both. They are affected by factors operating at the household and



**Fig. 2.3** UNICEF conceptual framework. *Source* Adapted from UNICEF (1998)

community levels, which are represented by the interrelated underlying factors of food, care and health (UNICEF 1992).

The efforts of households and communities to achieve food security can be constrained by available resources (or the lack thereof) and the sociocultural, economic and political factors that neglect human rights and perpetuate poverty. These events can have short- and long-term influences on childhood undernutrition.

As shown by the dotted lines in Fig. 2.3, the long-term consequences of child undernutrition have a backwards effect on the underlying and basic causes, thereby creating a vicious circle.

A specific vicious cycle is that related to intergenerational consequences. Young girls who experience poor growth become stunted women, and they are more likely to give birth to children with low birthweights. If these infants are female, they are likely to continue the cycle by being stunted in adulthood as well (UNICEF 1998; Cesani et al. 2014).

Cornia et al. (2016), Sassi (2014) provide examples of use of the conceptual framework designed by UNICEF. The first study investigates the sources of food price volatility and child malnutrition in Niger and Malawi, whereas the second examines the economic and health determinants of child malnutrition in the Malawian district of Salima. As in the application of the framework described in Sect. 2.3, this conceptual scheme is used to define the models to be tested. The contribution by Cornia et al. (2016) shows that in Niger and Malawi, child malnutrition is related not only to changes in international food prices but also to the impact of agricultural policies on domestic production and prices. These issues combine with persistent food price seasonality and recurrent and poorly addressed famine phenomena. The paper by Sassi (2014) highlights three major aspects: the relevance of seasonal events and climatic shocks to child malnutrition in Malawi, the urgent need to arrest the long-term cycle of this problem, and the differential responses of child malnutrition to food and health policies.

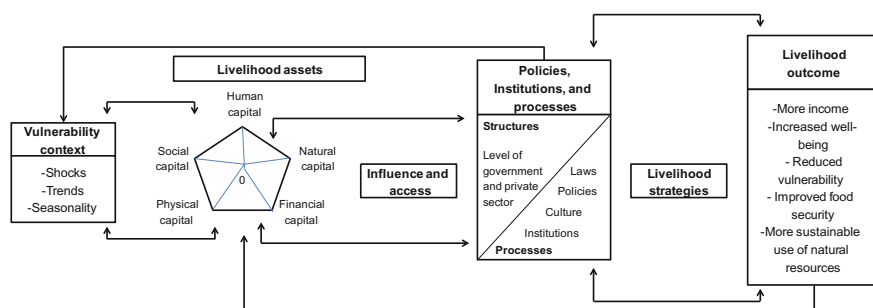
## 2.5 Sustainable Livelihood Framework

The sustainable livelihood framework refers to the Sustainable Livelihood Approach adopted to understand the context in which a household pursues its livelihood and food needs. This framework examines the influence of macro-level policy and institutions on household livelihood options (USAID 2012). Figure 2.4 shows this framework.

The key concept of the sustainable livelihood framework is the sustainable livelihood. Livelihoods refer to the capabilities, material and social assets, and activities required for a means of living (Chambers and Conway 1992).

A livelihood is sustainable when it can adapt to threats, can maintain or enhance its capabilities and assets, and does not compromise other livelihoods both locally and more widely, both now and in the future (Chambers and Conway 1992; FAO 2002).





**Fig. 2.4** Sustainable livelihood framework. *Source* Adapted from DFID (2001)

The sustainable livelihood framework reflects six principles: people-centeredness, micro-macro links, strength building, holism, dynamism, and sustainability.

The Sustainable Livelihood Approach is people-centred because people are put at the centre of the development process. The emphasis on micro-macro links underlines the need for the policy interventions to be based on local insights and to prioritise poor people and their livelihoods (Ashley and Carney 1999). This approach does not concentrate on problems, constraints and needs but on the households' perceived strengths and opportunities (FAO and DFID 2000), which are defined in the dynamic context in which households live and on which the approach is built. Therefore, the Sustainable Livelihood Approach becomes holistic and dynamic. Sustainability is regarded as a holistic concept because it includes economic, institutional, human, social, environmental and agro-ecological aspects.

The sustainable livelihood framework consists of five blocks: the vulnerability context; livelihood assets; policy, institutions and processes; livelihood strategies; and livelihood outcomes. They underline the main factors affecting people's livelihoods. In Fig. 2.4, the arrows describe the interactions and influences among the five blocks.

The vulnerability context block describes the external environment that negatively affects people's livelihoods and food security, including the following:

- Trends (also called stresses), which are changes occurring over a longer period that exert ongoing pressure on the household's livelihood and food security, including population, resource, economic, political and technological trends;
- Shocks, which are sudden negative events, such as human health, natural, economic, conflict and crop and livestock shocks;
- Seasonality, including seasonal changes in prices, production, health and employment opportunities (DFID 2001).

The reference to the concept of vulnerability in the name of this block clearly indicates that both food security and poverty are considered dynamic dimensions in this framework and that people's livelihoods are affected by the risks that they face and by their abilities to overcome such risks at different levels (Lovendal et al. 2004).

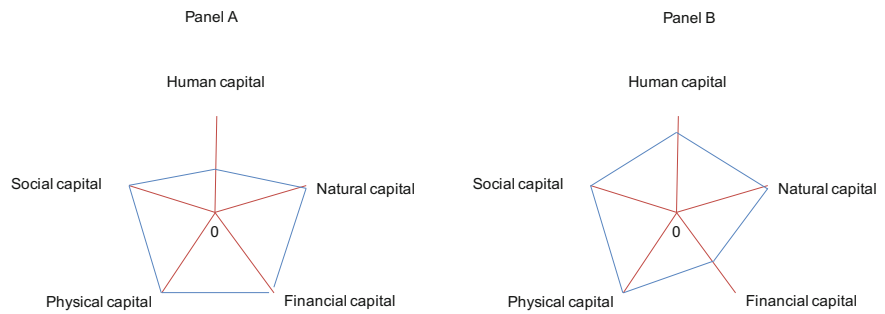
The livelihood asset block, also called the asset pentagon, schematically shows the state of the ownership and control of the combination of assets, or capital types, that people have with which to respond to vulnerability. Following DFID (2001), the five categories of core assets are as follows:

- Human capital, which represents the stock of skills, knowledge, and abilities embodied in an individual, household or population of a social group. These assets result from education, training and experience, and they are used in employment or otherwise contribute to the economy. This category of assets also includes two additional elements: intangible traits, such as ambition and persistence, and individual health status, which depends on health services, sanitation, clean water, and adequate food intake. These aspects influence the ways in which individuals apply their knowledge and capabilities to livelihood activities (USAID 2012).
- Natural capital, which is the stock of natural resources that people rely on and use to expand or enhance their livelihoods, such as land, forests, water, the environment, wildlife and biodiversity.
- Financial capital, which, within the livelihood framework, differs somewhat from that prevailing in the economic literature. In fact, financial capital includes not only available stocks (savings and credit) but also regular inflows of money, such as state transfers (pensions and other forms) and remittances, and all other assets held as a store of value, such as livestock.
- Physical capital, which includes the basic infrastructure. In other words, it includes changes in the physical environment that help people meet their basic needs, increase productivity (i.e., transport, water, shelter, energy, and access to information), and improve productivity goods, which are the instruments adopted by people to improve productivity (i.e., agricultural equipment and bicycles).
- Social capital, which is the attitude, spirit and willingness of people to collaborate and cooperate through mechanisms such as networks, to share trust, norms and values, and to engage in collective, civic or political activities to achieve mutual benefits.

In Fig. 2.4, point *O* in the asset pentagon represents zero access to assets, while the outer perimeter represents the maximum level of access to them. Figure 2.5 provides a hypothetical example of asset pentagons. The pentagon in Panel A indicates less ownership of human capital than does the pentagon in Panel B, where more limited ownership of financial capital is evident. The households in both groups have full control of the other assets.

Notably, the analysed approach should consider not only the quantity but also the quality of the assets that people own and control. For the calculation of the different typologies of livelihood assets see, for example, Su and Shang (2012), Shivakoti and Shrestha (2005).

Policies, institutions and processes comprise the second block of the sustainable livelihood framework. This block describes the structures and processes that affect access and the influence of livelihood strategies, the combination and type of



**Fig. 2.5** Example of ownership and control of assets

livelihood assets and the vulnerability context. The structures, both public and private, act according to the processes, particularly to legislation (both international and domestic), policies, institutions, culture (in terms of societal norms and beliefs), and power relations. Power relations vary according to the age, gender, caste and class.

The block livelihood strategies includes the range and combination of capabilities, assets and activities that people choose to adopt to achieve their livelihood outcomes and to address the threats that influence the context in which they live and, in turn, make them vulnerable.

The livelihood outcome block identifies the achievements or outputs of the livelihood strategies (GLOPP 2008). The outcomes that people achieve with their assets and strategies may include higher incomes, greater well-being, reduced vulnerability, greater food security, and/or improved environmental sustainability. Therefore, food security is one of the possible livelihood outcomes and appears in a separate category because of its importance and policy priority. Moreover, food security depends not only on agricultural productivity and its sustainability but also—above all—on how people, especially poor people, gain access to livelihoods assets.

The assets under control of households affect food security indirectly through their impact on strategies and outcomes and directly according to the share of assets owned (or under one’s control) and employed to access food. This relationship is explained in Table 2.1.

**Table 2.1** Food security and the use of assets owned or under one’s control

	Food secure household	Food insecure household
Use of a small proportion of assets owned or under one’s control	Best off	Not overly difficult to improve
Use of a large proportion of assets owned or one’s under control	Food secure but at great risk of becoming food insecure	Worst off

Source Adapted from USAID (2012)

**Table 2.2** Livelihood interventions and food security

Livelihood phase	Livelihood intervention	Target	Description of the livelihood intervention
Income growth and stabilisation	Promotion	Household with low vulnerability to food insecurity engaged in income growth activities	Development-based interventions that involve improving the resilience of household livelihoods so that food and other basic needs can be met on a sustainable basis
Risk reduction and risk exposure reduction	Protection	Vulnerable households engaged in ex ante risk reduction strategies and ex post loss management	Interventions that involve protecting household livelihood systems to prevent the erosion of productive assets and replacing or rebuilding productive assets
Destitution or distress	Provision	People in an emergency or those who are chronically vulnerable	Food and health relief based interventions that involve providing food and meeting other essential needs for households in order to maintain nutritional levels and save lives

*Source* Adapted from International Recovery Platform & UNDP India (2010), USAID (2012)

Within the sustainable livelihood framework, livelihood interventions are categorised into three overlapping phases: livelihood provisioning, livelihood protection and livelihood promotion (International Recovery Platform and UNDP India 2010). Table 2.2 presents these interventions according to their livelihood phase.

In the acute phase of a disaster, livelihood provisioning activities typically consist of saving lives through the procurement of essential food and non-food items. Livelihood protection interventions have the specific objective of protecting, replacing and rebuilding livelihood assets, especially productive assets. Livelihood promotion interventions aim to strengthen livelihoods to improve resilience to future disasters and their sustainable use.

The Sustainable Livelihood Approach has gained broader adoption among development organisations. For a review of the key elements of the use of this conceptual method in 15 development agencies (bilaterals, multilaterals and non-governmental organisations), see, for example, Hussein (2002).

## 2.6 Household Economy Framework

In the early 1990s, Save the Children and the Global Information and Early Warning System of the FAO developed the Household Economy Approach as an instrument to predict short-term changes in the population's access to food to

realize more effective decision making. The features of the Household Economy Approach make this framework suitable for use in early warning and emergency needs assessments. However, it can also be adopted to identify appropriate means of assistance for longer-term development programmes or policy changes.

Focusing on a specific livelihood zone, average households, each of them representing a different wealth group, are based on an investigation aimed at providing information on the ways in which they obtain the needed food and cash; their assets, their opportunities and the constraints that they face; and the coping mechanisms that they can adopt in times of crisis (Berhanu et al. 2007).

The first concept at the heart of the Household Economy Approach is the livelihood zone.

Livelihood zoning consists of defining the geographical groups to which households belong. A livelihood zone is a geographic area in which households share the same patterns of access to food and income (Grillo 2009; Holzman et al. 2008).

Within a livelihood zone, households are grouped together according to the local definition of wealth: the holding of assets with a market value (Seaman et al. 2000). A wealth group includes households with similar capacities to exploit different food and income possibilities. Finally, for the households in each wealth group, the analysis of the livelihood strategies investigates their sources of food and income and their expenditure patterns.

Central to this approach is the understanding of people's normal economy and the opportunities that they have to react to the crisis. More precisely, the following four aspects are considered:

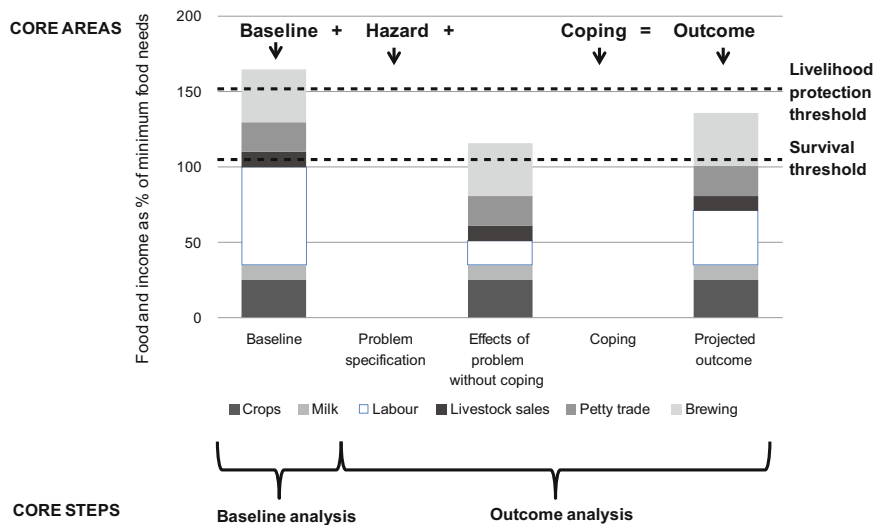
- The ways in which people in different social and economic circumstances obtain the food and cash that they need;
- Their assets, their opportunities and the constraints that they face;
- Their options in times of crisis;
- The connections among different groups and areas (Seaman et al. 2000; Holzmänn et al. 2008). This conceptual framework is summarised by the following equation based on four elements:

$$\text{Baseline} + \text{Hazard} + \text{Coping} = \text{Outcome}$$

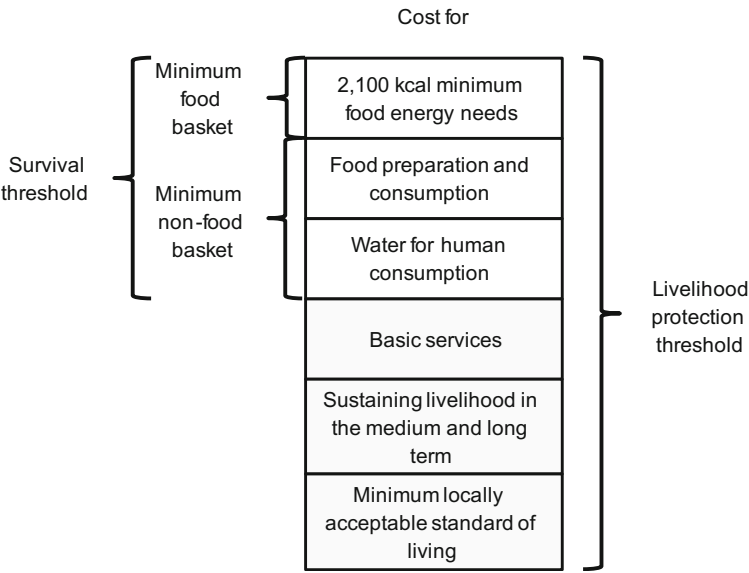
Figure 2.6 provides a better understanding of these elements.

The vertical axis represents food and income expressed as percentage of minimum annual food energy needs. The minimum annual food energy needs refer to the internationally accepted minimum energy requirement of 2100 kilocalories (kcal) per person per day, which is compared with the food and income sources converted into kcal per person per day.

The other two elements in Fig. 2.6 are the survival and livelihood protection thresholds. As shown in Fig. 2.7, the survival threshold includes the minimum food energy needs, the so-called food basket, and the non-food basket.



**Fig. 2.6** Core areas and steps of the household economy approach. *Source* Adapted from Holzmann et al. (2008)



**Fig. 2.7** Components of the survival and livelihood protection thresholds

The minimum non-food basket consists of two components. The first component is represented by the cost for food preparation and consumption, which includes items such as salt, soap, firewood for cooking and basic lighting (Seaman et al. 2000). The second element is the expenditure for access to water for human consumption.

The livelihood protection threshold adds the expenses for sustaining local livelihoods to the cost of the minimum food and non-food basket. These expenditures are in basic services, including regular medical and schooling expenses; the preservation of livelihoods in the medium and long term, such as the routine purchase of seeds and fertilisers; and the achievement of a minimum locally acceptable standard of living, including that required to obtain basic clothing, coffee and tea.

Turning to Fig. 2.6, the first bar provides a picture of the household's economy, its total access to food and its income in a normal year. The second bar shows the implications of a shock on household livelihoods if no coping mechanisms are introduced. The specific problem that the hazard triggers is part of the problem-specification step carried out between the first and second bars. The outcome, the third bar in Fig. 2.6, depends on the people's capacity to react to the hazard. It determines their access to food and their income sources after a shock. The projected outcome conveys the capacity of households to meet their basic needs after a shock, represented by the survival threshold, and to protect their livelihoods, measured by the livelihood protection threshold.

In the example depicted in Fig. 2.6, the shock is on the labour market. It reduces the amount of income from this source. After the introduction of the coping mechanisms, the household can meet its food and non-food basic needs because the third bar is above the survival threshold. However, this bar is below the livelihood protection threshold, meaning that the household is unable to fully protect its livelihood.

For an application of the Household Economy Approach see, for example, the baseline reports produced by the Food Security and Nutrition Analysis Unit–Somalia for the Somali livelihood zones (available at <http://fsnau.org/products/baseline-reports>).

## 2.7 Resilience Conceptual Framework

The nature of resilience implies a dynamic conceptual framework that can capture all possible positive and negative impacts of shocks on household well-being and the capacities activated to avoid long-lasting adverse effects.

The resilience conceptual framework at the heart of the RIMA-II adopted by the FAO (2016) is described in Table 2.8.

The state of food security at time zero,  $Y_0$ , is represented by a set of  $R_0$  characteristics some of which depend on time, while others are time-invariant. These

characteristics contribute to household resilience and among them there are the following four pillars of resilience:

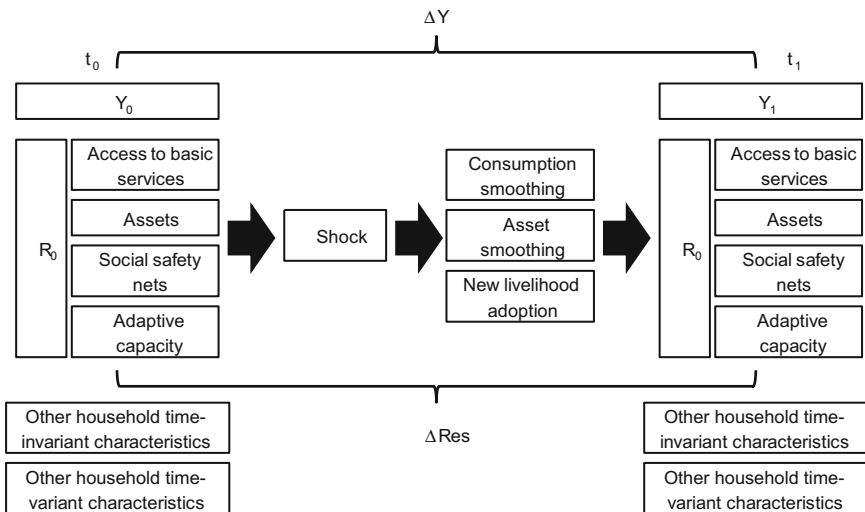
- Access to basic services, both in quantitative and qualitative terms;
- Productive and non-productive assets;
- Social safety nets, including formal and informal transfers;
- Adaptive capacity.

These four dimensions diverge from the most cited core components of resilience introduced by Béné et al. (2012) and described in Chap. 1, namely, absorptive, adaptive, and transformative capacities. In fact, the FAO adopted a practical classification to be used for analytical purposes.

Following an endogenous or exogenous shock, households activate a series of coping strategies, normally consisting of consumption smoothing, asset smoothing and new livelihood adoption. This aspect introduces the fifth pillar of resilience—sensitivity—which relates to household risk exposure, persistence and resistance.

Household resilience contributes to responses to shocks and allows households to return to their previous state of well-being,  $R_0$ , at time  $t_1$  (see Fig. 2.8). Consequently, between time  $t_0$  and  $t_1$ , the impact of the shock on the household’s well-being can result in an increase or a decrease in  $Y$  ( $\Delta Y$ ), which causes a positive or negative change in the resilience capacity ( $\Delta R$ ).

The household is the unit of analysis of the abovementioned conceptual framework. In fact, the FAO (2016) regards the household as a sub-system within the food system. This understanding fits the definition of a system provided by Spedding (1988), according to which a household can be considered a “group of interacting components, operating together for a common purpose, capable of



**Fig. 2.8** Resilience conceptual framework. *Source* Adapted from FAO (2016)



reacting as a whole to external stimuli: it is affected directly by its own output and has a specific boundary based on the inclusion of all significant feedbacks”. As argued by Alinovi et al. (2010a), the household is the central decision-making unit in time of shocks, which also becomes the interface with institutions and formal and informal social networks.

Alinovi et al. (2010a, b) use the resilience framework to investigate household resilience to food insecurity. In Alinovi et al. (2010a), resilience by household cluster in eight provinces of Kenya is compared. The investigation shows significant differences across provinces and among clusters with specific determinants of resilience among livelihood groups. Alinovi et al. (2010b) use the Palestinian case to clarify the meaning, scope and measurement of resilience in food systems and identify the relationship between resilience and concepts such as vulnerability and between resilience and food insecurity outcomes.

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