

Conceptual Framework: Poverty



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The overall aim of the Ecosystem Services for Poverty Alleviation (ESPA) programme is the development of new knowledge through excellent research, that seeks to understand and explain the complex relationship between ecosystem services and poverty alleviation, including an improved understanding of how ecosystems function, the services they provide, the full value of these services and their potential role in achieving poverty alleviation.

[The Millennium Ecosystem Assessment \(MA\)](#) was the starting point for ESPA's understanding of ecosystem services. Ecosystems are the places where biotic and abiotic components of the environment come together spatially. The natural ecosystem structures and processes underpin a variety of ecosystem functions and capabilities, such as primary production, water regulation and nutrient cycling that ultimately support ecosystem services, such as timber production or freshwater provision, from which people benefit.

Ecosystem services are defined as the final point in the delivery chain from ecosystems that are used by people for material goods, such as food or fuel, or for non-material goods such as climate regulation, cultural benefits or flood prevention. Both material and non-material goods have values which can be measured in monetary or non-monetary terms (e.g. health status, cultural appreciation). The same goods may have different values depending on the context (place, time, person, etc.). The values different social groups derive from ecosystems can influence how people treat or manage the ecosystem, which will affect their natural structure and processes. Hence this component can be thought of as a cycle with many kinds of feedback.

A number of different societal structures and processes provide enabling conditions for poor people and societies to sustain benefits derived from ecosystem services, including local structures and relationships affecting livelihoods, equity and natural resource management, and the political economy (governance, social structures, markets and institutions leading to the social, political and economic processes that ultimately shape the management of ecosystems). External drivers of change include societal (demographic change, economic growth, human migration or education), technological and environmental process (e.g. climate change or more short term impacts), and may be negative or positive – and in some cases irreversible.

It is essential that there is clarity in both the ecosystem services and the poverty alleviation components of ESPA projects, particularly in framing and executing research design and impact strategies. Whilst much work has been done on defining what is meant by ecosystem services, there has been less focus on the meaning of poverty in the context of ESPA. This simple and practical framework addresses this imbalance.

The framework was developed for current and future ESPA researchers, who will be expected to use the ideas presented in this framework as the basis for their understanding of poverty. It is anticipated that these ideas will inform ESPA research from the initial project baseline or situation analysis, and throughout the research process.

Understanding poverty

Poverty is a contested concept, the particular meaning of which depends on the ideological and political context within which it is used. However, in the broadest sense it can be generally understood as the lack of, or inability to achieve, a socially acceptable standard of living, or the possession of insufficient resources to meet basic needs. The meaning of 'socially acceptable' or 'basic' is itself often in need of careful debate or specification. It is created and perpetuated by different processes and social relations in different locations, and is experienced and conceived differently according to context.

Many poverty analyses describe the condition of being poor, rather than considering how or why the condition exists. These descriptions typically focus on individual attributes (e.g. a lack of assets, of education or of health, etc.). However, these attributes are the outcomes of social processes and need to be understood within the context of social institutions and systems. To understand, anticipate or attempt to alter these outcomes, it is necessary to understand the structures and processes that underlie these deprivations.

Poverty therefore needs to be understood as being strongly influenced by the resources that people can claim, under what conditions and with what level of choice. Social differentiation, distributional concerns and issues of power are central to poverty analyses. Government structures and other formal and informal processes and institutions govern social relations and power structures, which extend over various spatial, temporal and social scales. These in turn affect people's opportunities, their ability to make choices, their access to resources, etc., and therefore the distribution of benefits, costs and risks within and between individuals and groups.

A distinction can be made between absolute and relative poverty. Absolute poverty refers to the inability to meet what are thought to represent the absolute minimum requirements for human survival. The poverty status of any individual or household is considered completely independently of the conditions of other individuals or households. Those considered to be absolutely poor are often identified with reference to poverty lines – those households or individuals that fall below the poverty line (however set). While the \$US1.25 per day is perhaps the most well-known poverty line, absolute poverty can also be measured against non-income aspects of deprivation (e.g. food insecurity, malnutrition, lack of access to health care, etc.).

Relative poverty considers the status of each individual or household in relation to the status of other individuals, households in the community, or other social groupings, taking into account the context in which it occurs (i.e. their position within the distribution of that population). Relative poverty typically changes spatially and temporally, and measures of relative poverty are therefore not necessarily comparable between locations (due to the differing social stratification between communities) or over time. The relative approach examines poverty in the context of inequality within a society, though they should not be conflated.

Poverty can also be viewed objectively and subjectively. It is considered to be objective when observable and measurable (typically quantitative) indicators are used to measure material or non-material dimensions. Subjective measures represent psychological elements and perceptions of poverty, where individuals' judgements are sought about their experience of life and the aspects they value in their lives. The incorporation of subjective measures into the understanding of poverty is recognition that decision making is partially related to individuals' perceptions about their constraints and available alternatives. There has been increasing support for subjective well-being measures to complement assessments using objective indicators.

The multiple dimensions of poverty

In the second half of the 20th century, poverty was explained largely as a result of inadequate economic growth and individual failings, and measured as per capita income or consumption, ignoring structural issues relating to the unequal distribution of wealth and opportunity. The solutions were therefore interpreted as a need for greater economic growth, with a focus on building human capacity/capital.

In recent decades, and drawing heavily on the work of Amartya Sen¹, the conceptualisation of poverty has broadened to include non-economic components. Thus, poverty is increasingly being recognised as multi-dimensional, distinguishing the numerous aspects of people's lives affected by poverty, including economic and non-economic dimensions, and recognising that poverty occurs within – and is affected by – the political, economic, social and cultural context.

Recognising poverty as being multi-dimensional does not necessarily change who is classified or identified as poor (though it can, depending on the classification criteria), but allows better characterisations of the poor and has significant implications for analysis. A better understanding of poverty and of the interaction between different dimensions allows a more informed choice in the design and implementation of appropriate policies to reduce poverty.

The MA lists five contributory elements of well-being, drawn from the *Voices of the Poor* exercise (Narayan *et al.*, 2000a; Narayan *et al.*, 2000b; Narayan and Petesch, 2002), one of the largest studies where the poor themselves defined poverty. Together they are said to provide the conditions for physical, social, psychological and spiritual fulfilment (though they are rather general and do not provide any sense of how they can be achieved). The five elements are:

- the basic material needs for a good life – the ability to have secure and adequate livelihoods, including income and assets, enough food at all times, adequate shelter and access to goods;
- health – the ability of an individual to feel well and be strong, and have a healthy physical environment. This includes the ability to be adequately nourished and free from disease, to have access to adequate and clean drinking water and clean air, and to energy to keep warm and cool;
- good social relations – presence of social cohesion, mutual respect and the ability to help others and provide for children, equitable gender and family relations;
- security – safety of person and possessions, secure access to necessary (natural and other) resources, and security from natural and human-made disasters;
- freedom of choice and action – ability of individuals to control what happens to them and to be able to achieve what they value doing or being. Freedom and choice cannot exist without the presence of the other elements of well-being (MA 2003).

Many dimensions have been identified in the literature, including (but not limited to) those relating to physical, material, social, psychological and/or experiential dimensions. The most commonly used dimensions to date are shown in Table 1, drawn from a review of leading papers dealing with multidimensional poverty, whether theoretical or empirical.

¹ Amartya Sen is a Nobel Prize-winning economist, who has won international acclaim for his work on famine and poverty, social choice theory, welfare and development economics. Sen also helped to create the United Nations' Human Development Index, the first multidimensional indicator of human development, which is widely used internationally.

Dimension	Frequency	Percentage
Asset ownership	30	6
Access to public services	8	2
Agency	1	0
Demographics	13	3
Dignity	13	3
Education	46	9
Employment	136	26
Empowerment	2	0
GNP/capita	7	1
Health	70	14
Housing conditions	47	9
Income/expenditure	50	10
Leisure	5	1
Life expectancy	6	1
Literacy	8	2
Psychological/subjective	9	2
Security	12	2
Social relations	21	4
Water and sanitation	22	4
Other	26	5
Total	532	103*

Table 1 Review of poverty dimensions
 * Adds to >100 due to rounding
 Source: See Appendix 1.

ESPA researchers will be expected to consider the multidimensionality of poverty in their research.

The literature abounds with discussion about which dimensions are the most appropriate (and indeed with confusion between dimensions and indicators), but much of the analysis has, in practice, depended on existing data availability. The choice of which dimensions to include in any analysis will depend on the outcomes to be monitored. Alkire (2007) describes five (often overlapping) selection methods including the use of: existing data or convention; assumptions (explicit or implicit about what people do or should value); public ‘consensus’ (e.g. the millennium development goals); on-going participatory processes; or (empirical) evidence regarding people’s values.

As multiple deprivations compound the difficulty of trying to escape from poverty, any analysis must also consider how dimensions are connected to one another. Different dimensions can be totally independent, act as substitutes or complements, and any such linkages will vary according to context.

The way poverty is understood heavily influences the way it is measured, which in turn, impacts on the way problems are understood and solutions devised. Though they are often seen as being neutral and impartial, choices about what dimensions to consider and what indicators to use should be recognised as involving value judgements rather than being apolitical. Importantly, these choices should also reflect the way communities or individuals in the study understand and experience poverty. These choices – including decisions about which methods are appropriate for collecting the necessary data – should only be made having gained an understanding of local context and processes.

Poverty dynamics

The study of poverty dynamics provides information about whether and how poverty status changes over time, i.e. whether people move out of poverty, whether they stay poor, or whether they become poor (or poorer). Consideration should be given both to the short term (e.g. from season to season) and to the long term, where the duration of poverty determines whether it is transitory or chronic. The factors affecting the duration of these poverty spells are also of critical importance. Analysis of who experiences these changes, who does not and why (i.e. differences by gender, age, caste, race, household composition, etc.) should also be undertaken. These analyses are necessary to provide a more nuanced understanding of changes and the distribution of these changes across social groups, which are critical to designing appropriate policies for policy alleviation and reduction.

Poverty dynamics are linked to the phenomenon of vulnerability. Vulnerability is best understood as a situation in which people's livelihood systems are so sensitive to shocks, and so lacking in resilience, that they would find it difficult or impossible to recover from such shocks. Vulnerability affects both the likelihood of falling into poverty and the severity of that poverty.

The shocks that precipitate a drop into (further) poverty can affect single individuals or households (e.g. ill health or death, unemployment), or can be widespread across a community or region (e.g. natural disasters, macroeconomic shocks). Social risks emanate from how society functions, imposing limits on what different people can be and do, the assets they hold or strategies they can develop to respond to, or recover from, shocks. In some cases, the actions of others (e.g. those with more wealth, power, control over ecosystem services, etc.) may increase the vulnerability of others. Understanding the causes of vulnerability, and ways to protect against it, is relevant to the design of poverty alleviation policies as it is critical to changes in poverty status over time.

Equity is a principle of fair treatment that is a necessary consideration in any poverty analysis. It is interpreted here to mean that individuals have equal opportunities, though this does not necessarily result in equal outcomes. Analyses of equity will highlight the distribution of power and resources underlying poverty, particularly with respect to how the views of the poor are incorporated into decision making that will affect them, how people are able to participate (in terms of access to services, information, institutions, etc.) and how they are affected by the outcomes of activities or policy changes. Goals relating to equity are rarely explicit in policies aiming to alleviate or reduce poverty, and thus particular attention to how outcomes will affect different groups, in particular poor and marginalised groups, and different subgroups among them, is necessary.

Methods

The understanding of poverty significantly affects the way it is measured. However, measurement should be broader than simply classifying who 'the poor' are, but should be aimed at understanding underlying determinants and dynamics in order to design policy that can usefully contribute to poverty alleviation and reduction. Measurement also allows comparisons to be made over space and time, so impacts of policies or other interventions can be assessed.

Many (particularly quantitative) methods use household surveys as data collection tools, and thus measure at the household level. Household level measurement tends to ignore intra-household dynamics (e.g. gender and generational power relations and differential access to resources), implying that all household members have the same experiences. More sophisticated tool design can incorporate separate modules (e.g. for men and women), to capture differences in time use, perceived command over resources, etc. Certain aspects can also be measured at a group or community level (e.g. access to certain services or infrastructure). All have advantages and disadvantages, and analysis at several different levels often provides information that would be missed if only one level was addressed.

Mixed methods

The differences between quantitative and qualitative methods are often argued as the difference between breadth and depth, but it depends on the rigour of the methods used to collect the data. Research design is key to the rigour of data – quantitative data is not inherently more rigorous, credible or reliable than qualitative data.

The analysis of poverty is increasingly conducted using both qualitative and quantitative data collection methods and analysis, also known as mixed methods. The purpose of such combinations is to take advantage of the strengths of both, whilst trying to minimise their weaknesses.

Quantitative methods, depending on their sampling design, are thought to be desirable given their potential representativeness, the possibility for replication and of designing spatially and temporally comparable methods. Quantitative methods have typically been used in poverty analysis because of the dominance of measures of economic poverty. One of their major strengths is the perception that they are objective and reliable, and they thus seem more convincing to policy makers than qualitative data. However, quantitative analyses are relatively weak in generating an understanding of the processes by which impacts are felt and in describing causal pathways. Further, they rarely allow 'unexpected' results to emerge, while the use of statistical averages often hides the range and diversity of outcomes within a population or sub-group.

Qualitative data – textual and often normative – allows the investigation of issues in an in-depth, exploratory and potentially holistic manner (e.g. using semi-structured interviews, focus groups, participant observation, etc.). They are particularly useful in understanding (rather than establishing) causal processes, permit opportunities for unexpected factors to emerge, and allow for any necessary explanations to be provided during the data collection process. Due to their (often) small sample sizes, they are often perceived as being less robust than quantitative methods, reducing their external validity, and increasing the difficulty of verification and replication.

The range of ways in which it is possible to mix quantitative and qualitative methods can be viewed along a continuum. The main purposes of mixing methods are to maximise the strengths of both while minimising their weaknesses, to triangulate results, and for complementarity purposes – to clarify, explain and more fully elaborate (or refute) results. However, this is not to deny that some elements of poverty analysis are more appropriately conducted using qualitative or quantitative methods (e.g. understanding processes versus measuring trends).

Mixed methods are recommended for use in ESPA research projects.
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Mixed methods are preferred in ESPA because they generate more comprehensive analysis, with robust findings, than would be the case using only one approach. However, one of the most

significant difficulties associated with implementing mixed methods is trying to find people with the appropriate skills to collect, analyse and interpret the collected data.

Key Reading

Creswell, John W. (2003) *Research design: qualitative, quantitative and mixed methods approaches*. London: Sage.

Kanbur, S. M. R. (ed.) (2003) *Q-squared, combining qualitative and quantitative methods in poverty appraisal*. Delhi: Permanent Black.

References

- Alkire, S. (2007) 'Multidimensional poverty: how to choose dimensions.' *Maitreyee* (7).
- MA (2003) *Ecosystems and human well-being: a framework for assessment*. Washington, D.C., Island Press.
- Narayan, D., Chambers, R., Shah, M. K. and Petesch, P. (2000a) *Voices of the poor: crying out for change*. New York, Oxford University Press.
- Narayan, D., Patel, R., Schafft, K., Rademacher, A. and Koch-Schulte, S. (2000b) *Voices of the poor: can anyone hear us?* New York, Oxford University Press.
- Narayan, D. and Petesch, P. (eds.) (2002) *Voices of the poor: from many lands*. New York, Oxford University Press.

Sources used for review of poverty dimensions

- Alkire, S. (2007) 'The missing dimensions of poverty data: an introduction.' *OPHI Working Paper No.0*. Oxford: Oxford Poverty and Human Development Initiative.
- Alkire, S. and Foster, J. (2009) 'The MDGs: multidimensionality and interconnection.' Oxford: OPHI.
- Alkire, S. and Foster, J. (2011a) 'Counting and multidimensional poverty measurement.' *Journal of Public Economics*. 95(7–8): 476–487.
- Alkire, S. and Foster, J. (2011b) 'Understandings and misunderstandings of multidimensional poverty measurement.' *Journal of Economic Inequality*. 9(2): 289–314.
- Alkire, S. and Sarwar, M. B. (2009) 'Multidimensional measures of poverty and well-being.' Oxford: OPHI.
- Amarante, V., Arim, R. and Vigorito, A. (2008) 'Multidimensional poverty among children in Uruguay, 2004-2006. Evidence from panel data.' Meeting of the LACEA / IADB / WB/ UNDP Network on Inequality and Poverty, Universidad Católica de Santo Domingo, Santo Domingo, República Dominicana, June 13, 2008.
- Appiah-Kubi, K., Amanning-Ampomah, E. and Ahoritor, C. (2007) 'Multi-dimensional analysis of poverty in Ghana using fuzzy-sets theory.' *PMMA Working Paper No.2007–21*. Dakar: Poverty and Economic Policy Research Network.
- Asselin, L.-M. (2002) 'Multidimensional poverty. Theory. Composite indicator of multidimensional poverty.' Lévis, Québec: Institut de Mathématique Gauss.
- Asselin, L.-M. (2009) *Analysis of multidimensional poverty. Theory and case studies*. New York: Springer.
- Ayala, L., Jurado, A. and Perez-Mayo, J. (2011) 'Income poverty and multidimensional deprivation: lessons from cross-regional analysis.' *Review of Income and Wealth*. 57(1): 40–60.
- Basarir, H. (2011) 'Poor, multidimensionally speaking: evidence from South Africa.' *Journal of African Economies*. 20(3): 463–504.
- Batana, Y. M. (2008) 'Multidimensional measurement of poverty in sub-Saharan Africa.' *OPHI Working Paper No.13*. Oxford: OPHI.
- Berenger, V. and Celestini, F. (2006) 'French poverty measures using fuzzy set approaches.' In Lemmi, A. and Betti, G. (eds.) *Fuzzy Set Approach to Multidimensional Poverty Measurement*. Boston, MA: Springer Science.
- Betti, G., D'Agostino, A. and Neri, L. (2006) 'Modelling fuzzy and multidimensional poverty measures in the United Kingdom with variance components panel regression.' In Lemmi, A. and Betti, G. (eds.) *Fuzzy Set Approach to Multidimensional Poverty Measurement*. Boston, MA: Springer Science.

- Calvo, C. (2008) 'Vulnerability to multidimensional poverty: Peru, 1998–2002.' *World Development*. 36(6): 1011–1020.
- Chakravarty, S. R., Deutsch, J. and Silber, J. (2008) 'On the Watts multidimensional poverty index and its decomposition.' *World Development*. 36(6): 1067–1077.
- Coromaldi, M. and Zoli, M. (2007) 'A multidimensional poverty analysis. Evidence from Italian data.' *Preliminary draft*.
- Duclos, J. Y., Sahn, D. E. and Younger, S. D. (2006) 'Robust multidimensional poverty comparisons.' *Economic Journal*. 116(514): 943–968.
- Esposito, L. and Chiappero-Martinetti, E. (2008) 'Multidimensional poverty measurement: restricted and unrestricted hierarchy among poverty dimensions.' *OPHI Working Paper No.22*. Oxford: OPHI.
- Foster, J., McGillivray, M. and Seth, S. (2009) 'Rank robustness of composite indices.' *OPHI Working Paper No.26*. Oxford: OPHI.
- Fusco, A. (2003) 'On the definition and measurement of poverty: the contribution of multidimensional poverty.' 3rd Conference On The Capability Approach: From Sustainable Development To Sustainable Freedom, University of Pavia, 7–9 September, 2003.
- Fusco, A. and Dickes, P. (2006) 'Rasch model and multidimensional poverty measurement.' *IRISS Working Paper 2006-02*. Differdange, Luxembourg: INSEAD.
- Ibrahim, S. and Alkire, S. (2007) 'Agency and empowerment: a proposal for internationally comparable indicators.' *Oxford Development Studies*. 35(4): 379–403.
- Kakwani, N. and Silber, J. (2008) 'Introduction: Multidimensional Poverty Analysis: Conceptual Issues, Empirical Illustrations and Policy Implications.' *World Development*. 36(6): 987–991.
- Lugo, M. A. (2007) 'Employment: A Proposal for Internationally Comparable Indicators.' *Oxford Development Studies*. 35(4): 361–378.
- Lugo, M. A. and Maasoumi, E. (2008) 'Multidimensional poverty measures from an information theory perspective.' *OPHI Working Paper No. 10*. Oxford: Oxford Poverty and Human Development Initiative.
- Lustig, N. (2011) 'Multidimensional indices of achievements and poverty: what do we gain and what do we lose? An introduction to JOEI Forum on multidimensional poverty.' *Journal of Economic Inequality*. 9(2): 227–234.
- Miceli, D. (2006) 'Multidimensional and fuzzy poverty in Switzerland.' In Lemmi, A. and Betti, G. (eds.) *Fuzzy set approach to multidimensional poverty measurement*. Boston, MA: Springer Science.
- Molnar, M., Panduru, F., Vasile, A. and Duma, V. (2006) 'Multidimensional fuzzy set approach to poverty estimates in Romania.' In Lemmi, A. and Betti, G. (eds.) *Fuzzy set approach to multidimensional poverty measurement*. Boston, MA: Springer Science.
- Mussard, S. and Alperin, M. N. P. (2008) 'Inequalities in multidimensional poverty: evidence from Argentina.' *Applied Economics Letters*. 15(10): 759–765.
- Njong, A. M. and Ningaye, P. (2008) 'Characterizing weights in the measurement of multidimensional poverty: An application of data-driven approaches to Cameroonian data.' *OPHI Working Paper No.21*. Oxford: OPHI.
- Notten, G. (2008) 'Multidimensional poverty in the Republic of Congo: being poor simultaneously and in many ways.' *BWPI Working Paper No.65*. Manchester: Brooks World Poverty Institute/University of Manchester.
- Panek, T. (2006) 'Multidimensional fuzzy relative poverty dynamic measures in Poland.' In Lemmi, A. and Betti, G. (eds.) *Fuzzy set approach to multidimensional poverty measurement*. Boston, MA: Springer Science.

- Peres Ribas, R., Hirata, G. and Veras Soares, F. (2008) 'Debating targeting methods for cash transfers: a multidimensional index vs. an income proxy for Paraguay's Tekoporã Programme.' *IPC Evaluation Note*. Brasilia: IPC.
- Pérez-Mayo, J. (2007) 'Latent vs. fuzzy methodology in multidimensional poverty analysis.' *Research on Economic Inequality*. 14: 95–117.
- Reyles, D. Z. (2007) 'The ability to go about without shame: a proposal for internationally comparable indicators of shame and humiliation.' *Oxford Development Studies*. 35(4): 405–430.
- Samman, E. (2007) 'Psychological and subjective well-being: a proposal for internationally comparable indicators.' *Oxford Development Studies*. 35(4): 459–486.
- Seth, S. (2009a) 'A class of association sensitive multidimensional welfare indices.' *OPHI Working Paper No.27*. Oxford: OPHI.
- Seth, S. (2009b) 'Inequality, interactions and human development.' *OPHI Working Paper No.23*. Oxford: OPHI.
- Sonne-Schmidt, C., Tarp, F. and Østerdal, L. P. (2008) 'Ordinal comparison of multidimensional deprivation: theory and application' *Discussion Paper No.08–33*. Copenhagen: Department of Economics, University of Copenhagen.
- Stéphane, M. and Noel, P. A. M. (2005) 'Multidimensional decomposition of poverty: a fuzzy set approach.' *Working Paper 05–06*. Montpellier: University of Sherbrooke.
- Szeles, M. (2004) 'Multidimensional poverty comparisons within Europe. Evidence from the European Community household panel.' *IRISS Working Paper 2004–05*. Differdange, Luxembourg: INSEAD.
- Thomas, B. K., Muradian, R., De Groot, G. and De Ruijter, A. (2009) 'Multidimensional Poverty and Identification of Poor Households: A Case from Kerala, India.' *Journal of Human Development and Capabilities*. 10(2): 237–257.
- Waglé, U. R. (2008) 'Multidimensional poverty: An alternative measurement approach for the United States?' *Social Science Research*. 37(2): 559–580.
- Watson, V., Sutton, M., Dibben, C. and Ryan, M. (2008) 'Deriving weights for the Index of Multiple Deprivation based on societal preferences: The application of a discrete choice experiment.' *OPHI Working Paper No.23*. Oxford: OPHI.
- White, S. C. (2010) 'Analysing wellbeing: a framework for development practice.' *Development in Practice*. 20(2): 158–172.
- Yang, Y. and Hu, A. (2008) 'Investigating regional disparities of China's human development with cluster analysis: a historical perspective.' *Social Indicators Research*. 86(3): 417–432.
- Zupi, M. (2007) 'The multi-d-dimensions of poverty: some conceptual and policy challenges.' *Development*. 50(2): 31–41.

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