

World Health Organization
Collection on Long-Term Care

A LONG-TERM CARE FUTURES TOOL-KIT

PILOT EDITION

World Health Organization
Geneva

and

The Institute for Alternative Futures
Washington, D.C.

LONG-TERM CARE

FUTURES TOOL-KIT

WORLD HEALTH ORGANIZATION

World Health Organization
Collection on Long-Term Care

A LONG-TERM CARE FUTURES TOOL-KIT

PILOT EDITION

**World Health Organization
Geneva**

and

**The Institute for Alternative Futures
Washington, D.C.**

WHO Library Cataloguing-in-Publication Data

A long-term care futures tool-kit.

(World Health Organization collection on long-term care)

1.Long-term care - organization and administration 2.Delivery of health care – trends 3.Forecasting – methods 4.Health policy 5.Manuals 6.Developing countries I.World Health Organization II.Institute for Alternative Futures (U.S.) III.Series

ISBN 92 4 156233 1 (NLM classification: W 84.7)

© World Health Organization 2002

All rights reserved. Publications of the World Health Organization can be obtained from Marketing and Dissemination, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel: +41 22 791 2476; fax: +41 22 791 4857; email: bookorders@who.int). Requests for permission to reproduce or translate WHO publications – whether for sale or for noncommercial distribution – should be addressed to Publications, at the above address (fax: +41 22 791 4806; email: permissions@who.int).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

The World Health Organization does not warrant that the information contained in this publication is complete and correct and shall not be liable for any damages incurred as a result of its use.

The named authors alone are responsible for the views expressed in this publication.

This publication can be found on the WHO web site:

http://www.who.int/ncd/long_term_care/index.htm

http://www.who.int/chronic_conditions/en/

and on the Institute for Alternative Futures web site:

<http://www.altfutures.com/lctoolkit>

Preface

How to Use the LTC Futures Tool-Kit:

The LTC Futures Toolkit contains two main components:

- 1) The LTC Futures Tool Kit Report.
- 2) The LTC Futures Model (a Microsoft Excel spreadsheet).

The LTC Futures Tool Kit Report is intended to be used by groups of policy makers and health experts to investigate the future of LTC in their country and find new directions for effective health policy. Individuals or different groups of stakeholders (e.g. NGO's; academics; civic groups; professional organizations etc.) can effectively use the model and the exercises as well.

The LTC Tool-Kit Documentation contains the following materials:

- The Introduction explaining the background and purpose of the LTC Futures Tool-Kit
- Descriptions of the Supply factors for LTC used in the Model
- Descriptions of the Demand factors for LTC used in the Model
- A section explaining how to use and adjust the LTC Model
- Narratives of the four Scenarios used in the LTC Tool-Kit
- Exercises and Capture Sheets for users of the LTC Tool-Kit

The Tool-Kit provides a basic framework for a group investigation of LTC Care, but would work best using a facilitator, who could run the meeting, and guide the users through the exercise. A facilitator should study all the materials and pay close attention to the section on how to use and adjust the LTC Model. Participants in a group investigation should have the opportunity to familiarize themselves with the sections for the Supply factors of LTC, Demand factors of LTC, and the narratives of the four scenarios. The worksheets and exercise descriptions should be duplicated and distributed to participants during the meeting, as guided by the group facilitator.

The LTC Model is an Excel spreadsheet that contains estimates of future LTC care needs for a wide variety of countries. The Model can easily allow users to focus on the LTC forecasts for a specific country, and also provides the opportunity for further interactive adaptation. The spreadsheet does contain macros in order to fully function, so when the Excel file is first opened, allow the program to "Enable Macros" if a dialog box comes up.

Users without access to a PC can still study the materials and exercises of the LTC Toolkit. Group exercises can still be carried out, omitting the exercises designed to alter the assumptions of the LTC Model. Users with access to a PC can also email futurist@altfutures.com and receive a copy of the Model data for a specific country upon request.

Table of Contents

Introduction to the Long Term Care (LTC) Futures Toolkit	5
Long Term Care Trends in Developing Countries	6
Assessing Global Disability and Dependency Levels	11
Long Term Care Forecasts:	12
Supply Factors for Long Term Care:.....	13
Demand factors for Long Term Care	13
Long Term Care Scenarios:.....	14
Scenario 1: Conventional Expectations	15
Scenario 2: Crisis and Challenge.....	15
Scenario 3: Civic Connections	15
Scenario 4: Global Transformation	16
Scenario Adjustment	16
Ethical Consideration in LTC System Design.....	16
Supply factors for Long-term Care	18
Family Structure	19
Family Size.....	19
Availability of Women for Care.....	20
Gender Differentials in Life Expectancy.....	21
Social Capital.....	22
National Leadership.....	22
Relative Status of Care Giving	23
Perceptions of Disability	25
Economic Factors	26
Elderly workforce participation.....	26
Economic Development	27
LTC Funding	28
Caregiver Support.....	30

TABLE OF CONTENTS

Family Training	30
Care Resources for Families	30
Community Based Care	31
Demand Factors	33
Technologies	34
Computing and Communication	34
Physical Infrastructure	35
Genomics	36
Environment	37
Disability Friendly Design	37
Housing and Urban Design	38
Poverty and Sanitation	39
Social Risks	40
Collective Violence	40
Addictions	42
Public Safety	43
Personal Lifestyles	44
Obesity and Unbalanced Diet	44
Nutrition/Micronutrients	45
Exercise and Physical Activity	46
Safe Sex	47
Using the Long Term Care Futures Toolkit	49
Country Selection	50
Adjusting Supply	52
Adjusting Forecast Elements	54
How to adjust the Scenario forecasts	59
Viewing the Output	61
Policy Considerations	63
LTC Futures Toolkit: Scenarios	65
Scenario 1: Conventional Expectations	65
Scenario 2: Crisis and Challenge	67
Scenario 3: Civic Connections	69
Scenario 4: Global Transformation	71

TABLE OF CONTENTS

LTC Futures Toolkit: Exercise Worksheets	73
List of ExerciseWorksheets	73
Toolkit Field of Forces Forecast Exercise:.....	74
Toolkit Field of Forces Exercise Capture Sheet.....	75
Adding Additional Forces Exercise:	76
Adding Additional Forces Exercise Capture Sheet	77
Scenario Impact Adjustment Exercise:	78
Scenario Impact Adjustment Capture Sheet.....	79
Scenario Implications Exercise:	80
Scenarios Probability/Preferability Exercise	82
Policy Directions Exercise:	83
Next Steps Exercise:.....	85
Next Steps Exercise Capture Sheet	85

INTRODUCTION TO THE LONG-TERM CARE (LTC) FUTURES TOOL-KIT

The Long Term Care (LTC) Futures Toolkit is intended to give policy makers and stakeholders a tool to help consider the future of LTC in their country. The Toolkit uses forecasts of the future demographic impacts of disability incidence as the starting point for consideration of the issues involved in creating a more effective and humane LTC system. This LTC Futures Toolkit benefits from a wealth of experience in similar experiences using such futures tools in a wide range of settings, including projects for nursing internationally¹, judicial systems at the sub-national level², and integrating health futures tools into WHO's work³.

This LTC Futures Toolkit uses these national projections of future health as the foundation for the future projections of dependency ratios and LTC demand for each country. The toolkit is designed to be broadly applicable to the wide variety of LTC systems in developing countries around the world. Potential users of the toolkit could include national health ministries, regional health governments, applicable NGOs, or interested activist groups in nations.

The toolkit is designed to give users a basic framework with which they can consider the future of LTC. This framework consists of three basic elements:

1. LTC Forecasts
2. LTC Scenarios
3. The LTC Model

The three elements function together to allow users to identify areas in which threats and opportunities exist, and provides a spreadsheet model in which the baseline assumptions of the model can be easily adjusted and modified to better reflect the specific circumstances of LTC demand on a national or regional level.

The toolkit is not designed to make specific future forecasts for LTC; rather it uses quantitative forecasts as the starting off point for further investigation of LTC. The toolkit uses scenarios, which are narrative accounts of multiple possible futures, as a means to assist users to test their own assumptions about the future of LTC, and explore the uncertainties that need further consideration.

¹ IAF worked with the International Council of Nursing to develop ICN's vision statement and a process so that national nursing associations would explore alternative futures and enhance their own vision. See <http://www.icn.ch/vision.htm> and <http://www.altfutures.com/expertise/association.htm#a10>.

² A national project for State Court Systems developed tools for considering alternative scenarios and visions for the courts. See <http://www.altfutures.com/expertise/governance.htm#g8>.

³ WHO. *Health Futures in Support of Health for All, WHO/HST/93.4, a catalogue and discussion of futures tools applied to various health programs and the prospects for use in WHO.*

Long-Term Care Trends in Developing Countries

Changing demography, epidemiology and social realities, such as urbanisation, growing poverty, migration, changes in family structures and growing participation of women in the labour force make the search for effective long term care (LTC) policies one of the most pressing challenges facing modern society.

With the double burden of disease, chronic conditions as HIV/AIDS, malaria and lymphatic filariasis are joined by cardio & cerebro-vascular diseases, cancer, diabetes, mental illness and growing numbers of injuries, all requiring long term care. While the growing need for LTC policies was generally associated with industrialized countries, it is less widely acknowledged that LTC needs are increasing in the developing world at a rate that far exceeds experience of wealthy countries.

Developing countries in sub-Saharan Africa, Latin America and the Eastern Mediterranean, for example, will experience increases of 300-400% in absolute numbers of people requiring LTC over the next decades. By 2050 there will be one person in need of daily help for every five members of the working population in China. One of the major reasons for the steep increase in LTC needs is population ageing.

While most LTC systems must confront the challenges of providing effective care to increasing numbers of persons with chronic conditions, one major form of variation in LTC services is between countries at different stages of economic development. The following table illustrates the general pattern of LTC over four different stages of economic development:

Patterns of development of long-term care services at different stages of economic development

Lowest Income Economies	Low Income Economies	Middle Income Economies	High Income Economies
Almost all care is informal. Direct care is informal	Almost all care is informal	More limited informal care	More pressures on availability of informal care
Largely voluntary community workers (payment in kind, some training)	Paid local community workers, more training of these workers	Paid local community workers	Few community health workers
No personal care or home-making, but counseling, simple clinical responsibilities, and dispensing of supplies	No personal care or home-making, but counseling, simple clinical responsibilities, and dispensing of supplies	Some personal care and home-making, and less clinical care	Specialized personal care and home-making workers with no clinical or community development roles
Also community development role	Also community development role		
Professional staff in supervisory role	Professional staff in a supervisory role	Professional staff involved in more direct home care	Varying professional training for these workers and concern for over-professionalization
		Growing institutional care	Institutional care of major importance
		Emergence of some social-system-based home care	Professional home care highly developed
			Segregated social and health-based home-care systems

Source: WHO. Home-based long-Term Care: report of a WHO study group. Geneva, World Health Organization, 2000 (WHO Technical Report Series 898. Table 2).

While this Table describes the situation today, this does not presume that poor countries aspire to copy long-term care systems existing in rich countries, once their economies have improved. Quite to the contrary, developing countries will want to avoid the mistakes made in industrialized countries, while learning from their experiences. The main purpose of this futures project is to enable countries to plan today for systems which will fit their unique needs and preferences.

This futures project is an integral part of the overall WHO Long-term Care Policy Initiative, which is led scientifically by the JDC Brookdale Institute, Jerusalem, a WHO Collaborating Centre, and draws on experts and institutions from a wide range of developing and industrialized countries.

This initiative includes:

- A systematic review of the literature.⁴
- A comparative review of long-term care laws based on legislation and entitlement principles in five industrialized countries (Austria, Germany, Israel, Japan and the Netherlands).⁵
- An expert report, accepted by the 108th WHO Executive Board (WHO Technical Report Series, No. 898;) and ratified by the 54th World Health Assembly in May, 2001.
- Eleven developing country case-studies focusing on the general health system and current LTC provision (People's Republic of China, Costa Rica, Indonesia, Lebanon, Lithuania, Mexico, Republic of Korea, South Africa, Sri Lanka, Thailand, and Ukraine).⁶ Preliminary research has identified some of the following trends for LTC in developing countries:
 - Efforts are being made to provide home-based LTC in several countries. Some are providing a broad package of services that include home health, personal care, and homemaking; some are more narrow and focused on home health only.
 - Where it exists, home health is linked to the health system both financially and organizationally.
 - Family guidance and counselling that is delivered through home health systems are being emphasized in a number of countries.
 - Where it exists, personal care and homemaking services are targeted towards the very poor, and towards those without families. However, home health services are delivered on the basis of disability, not income.

⁴ WHO. Home care issues at the approach of the 21st century. An Annotated Bibliography. http://www.who.int/ncd/long_term_care/index.htm.

⁵ WHO. Long-term care laws in five developed countries. WHO/NMH/CCL/00.2 http://www.who.int/ncd/long_term_care/index.htm.

⁶ being prepared for publication

- Institutional LTC is provided by a number of countries – extensively in Lithuania and Ukraine, and to a lesser extent in China and the Republic of Korea. In the other countries, institutional provision of LTC is hardly provided.
- Countries with more extensive LTC services do not integrate these LTC services into one system. Typically, countries split these services between health and social services, a problem that is common in most industrialized nations.
- Generally, home health care is age-integrated. Age segregation is more typical of institutional LTC.
- Most health systems are making special efforts to develop community health care.
- In some countries, such as in Mexico and the Ukraine, NGOs are playing an important role in the development of LTC.
- Levels of volunteerism between countries vary, as well as, the degree to which volunteers receive training.
- There is a great deal of variation in human resource patterns. One clear pattern that has emerged shows that, as national economic resources increase, countries have LTC staff with higher levels of professional credentials.
- There seems to be a general hierarchy describing the development of home-based LTC. The first priority is typically home health with an emphasis on training and educating families. The second priority is usually personal care, finally followed by homemaking services. Most countries do not provide publicly funded personal care or homemaking, and instead rely on families and volunteers to provide these services.

These trends reflect the evolution of LTC systems in several middle-income developing countries. However, the variations revealed by these extensive case studies make it difficult to generalize about LTC care system trends in other developing countries.

Other aspects of this initiative have included:

- Case-studies of countries with tax-based LTC systems (Australia, Canada and Norway).⁷
- A summary report of lessons learned from the exchange of experience among experts from a wide range of developing and industrialized countries.⁸
- Estimates of the current and future long term care needs in WHO Member States.⁹

⁷ *being prepared for publication*

⁸ WHO. Lessons for Long-Term Care Policy. *WHO/NMH/CCL/02.1*
http://www.who.int/ncd/long_term_care/index.htm.

⁹ WHO. Current and Future Long Term Care Needs. *WHO/NMH/CCL/02.2*
http://www.who.int/ncd/long_term_care/index.htm.

- Qualitative studies on family care-giving in countries with a high HIV/AIDS prevalence and its effects on young girls and older women (Botswana, Cambodia, Haiti, Kenya, Thailand and South Africa).
- A guideline based on the above studies, lead by E. Lindsey.¹⁰
- Key policy issues in long term care.¹¹ This book includes chapters on : The role of the family and support to informal care, issues of co-ordination among various LTC services, and of LTC with the health and social service systems; human resource strategies in delivering LTC ; case management; quality of care and a conceptual framework for guiding the formation of long-term care policies in developing countries.
- One additional area of work relates to ethical responsibilities in LTC and the ethical discussion countries need to initiate as a baseline for designing fair and just policies.¹²

10

Finally, several websites have been created in order to help disseminate information regarding issues related to LTC:

- The Observatory on Health Care for Chronic Conditions
http://www.who.int/chronic_conditions/en/
- Surveillance of Non-communicable Diseases
<http://www5.who.int/noncommunicable-diseases/main.cfm?p=0000000380>
- Home-Based Long-Term Care
http://www.who.int/ncd/long_term_care/index.htm

¹⁰ WHO. Community home-based care in resource -limited settings. A framework for action. Geneva, World Health Organization, 2002, ISBN 92 4 156213 7, and http://www.who.int/ncd/long_term_care/index.htm.

¹¹ WHO. Jenny Brodsky, Jack Habib and Miriam Hirschfeld., eds. Key policy issues in long-term care. Geneva, World Health Organization 2002, ISBN 92 4 156225 0.

¹²WHO. Ethical Choices in Long term Care. What does Justice Require? Geneva, World Health Organization, 2002, ISBN 92 9 156228 5.

Assessing Global Disability and Dependency Levels

International efforts to develop standardized means to measure and assess the degree of disability in a population are still in their preliminary stages. Assessment tools such as the World Health Organization's International Classification of Functioning, Disability and Health (ICF)¹³ provides a systematic framework for assessing and categorizing the degree of disability in populations. While the ICF has been adopted by all WHO Member States at the 55th World Health Assembly, in May 2002, disability assessment standards such as the ICF have yet to be adopted and fully integrated into existing national practices of collecting and reporting health information. Only systematic surveillance and research will make it possible to have international comparisons on the type and prevalence of functional disabilities.

It will be years before there is full international adoption and reporting of ICF disability categorization data. In the meantime, the WHO 1990 Global Burden of Disease (GBD) study is one of the most systematic attempts to assess disability levels internationally. The GBD study aggregate and report the data according to eight geographic regions with generally comparable socio-economic profiles. While the GBD study provides an exhaustive systematic survey of information on the incidence of specific diseases, it does not provide for using the data to express national forecasts related to levels of disability, and the future of LTC needs.

The recent WHO study on Current and Future Caregiver Needs for People with Disabling Conditions¹⁴ has partially addressed this problem by using the GBD data on the prevalence of disability for each of the eight regions. This study uses data from the WHO 1990 Global Burden of Disease Study to calculate the global prevalence of disability within 8 regional groupings to estimate the number of people that require daily care by another person for their health, personal, or domestic needs. These measures of dependency for each of the 8 regions were applied to UN global population projections for each nation in the region, in order to forecast the number of disabled people and their ratio to the working (age 15 to 60) populace for the period between 2000 and 2050.

While this approach is limited by methodological concerns and lacks explicit data on the incidence of specific disabilities in a country, its primary advantage is that its use of GBD disability incidence rates provides a consistent means of assessing disability levels across the wide variety of developing countries. This approach to calculating country-specific disability prevalence used the following assumptions:¹⁵

- *Accuracy of the UN Population Projection Estimates.* The projections are driven mainly by expectations of age-specific mortality, which change relatively slowly compared to factors like fertility rates.

¹³ WHO (2001), International Classification of Functioning, Disability and Health ICF. Geneva, World Health Organization), ISBN 92 4 154542 9.

¹⁴ Rowan H. Harwood and Avie Aihie Sayer. Current and Future Caregiver Needs for People with Disabling Conditions, 2002.. http://www.who.int/ncd/long_term_care/harwood.pdf.

¹⁵ Rowan H. Harwood and Avie Aihie Sayer. Current and Future Caregiver Needs for People with Disabling Conditions. 2002. http://www.who.int/ncd/long_term_care/harwood.pdf.

- *Validity of the Disability Prevalence Rates.* While the GBD study is based on specific diagnoses, the model uses these diagnoses to infer disability. Current population studies on disability using ICIDH or ICF definitions are limited in availability and coverage. However, inferring disability from the catalogued diagnoses in the GBD allows for an approximate representation of dependency using standardized global data.
- *Homogeneity of Country Groups.* GBD data for disease incidence in a variety of demographic categories is aggregated into eight groupings of countries that are generally homogenous demographically and economically. However, there can be disease specific variations between the countries in each of the eight groups, especially among the ‘Other Asia and Islands’ group which ranges from Mongolia to Singapore.
- *The Stability of Disability Prevalence Rates.* The model assumes the stability of disease prevalence rates over the next 50 years. While there is great potential for preventive health programs and the compression of morbidity over the next 50 years, there are a great many challenges to quantifying this using currently available data.
- *Relationship between Disability Level and the Need for Care.* GBD project disabilities were grouped based on preference-weight scores that measure the value, worth or utility of a health state. While this measure of disability is similar to more clinical measures of severity, they are not identical. The wide range of overlap between the two measures allows disability to serve in the model as a close proxy for dependency.

Long Term Care Forecasts:

Four broad areas shaping demand and supply were identified through interactive discussions with WHO staff in Geneva and with LTC experts at the Valencia Forum for Researchers, Educators and Providers (Valencia, Spain April 1-4, 02) in preparation of the Second United Nations World Assembly on Ageing.

The expert participants suggested the general areas that could be leveraged by policy makers to affect LTC in developing countries. Against this background, IAF identified three specific aspects of each of the topic areas. These topics provide the basic “levers” which policy makers can address to influence the future supply and demand for LTC. These are presented here. The model will allow users to determine the weights for each of these in their local or national setting, and to substitute others that may be more significant in their settings.

The following lists the factors that were selected as areas for their future impacts on LTC:

Supply Factors for Long Term Care:

Family Structure

- Family Size
- Availability of "Informal" Caregivers
- Gender Differentials in Life Expectancy

Social Capital

- National Leadership
- Relative Status of Care Giving
- Perceptions of Disability

Economic Factors

- Elderly Workforce Participation
- Economic Development
- LTC Funding

13

Informal Caregiver Supply and Support

- Family Training
- Care Resources for Families
- Community Based Care

Demand factors for Long Term Care

Technologies

- Computing and Communication
- Physical Infrastructure
- Genomics

Environment

- Disability Friendly Design
- Housing and Urban Design
- Poverty and Sanitation

Social Risks

- Collective Violence
- Addictions
- Public Safety

Personal Lifestyles

- Obesity and Unbalanced Diet
- Nutrition/Micronutrients
- Exercise and Physical Activity
- Safe Sex

These forecast areas provide general areas in which future developments and policies could impact the supply and demand of LTC in developing countries over the next 50 years. The futures toolkit uses the baseline forecasts of future national disability incidence as the foundation for the disability projections. These baseline estimates can be left as is, or users can alter the baseline forecasts for each area. If there are national disability surveys available, such data should definitively be given preference over our estimates.

The given circumstances of a particular country could warrant adaptation of the forecasts. If users wish to change the baseline forecasts, they are able to do so by changing the net effect on supply or demand by adjusting the appropriate “lever” in the model. Each lever can be adjusted along a scale ranging from -5 to +5. Each increment in the scale adjusts the effect on the supply or demand of LTC by a fixed percentage of the annual total. Users can customize the relative impact of each forecast area throughout this range to better reflect the specific environment of healthcare for a given nation or region.

There are two critical questions that are central to the construction of the LTC Scenarios:

1.) The extent to which “compression of morbidity” can diminish future demand for LTC.

The “Compression of Morbidity” hypothesis, first advanced by James F. Fries, in 1980, argues that delaying the onset of disability until the very final stages of life may reduce the incidence of disability among the elderly. There is some evidence – such as lower per-capita health-care costs in the US Medicare system for the “old elderly” – that indicates that chronic disability and disease can be postponed until the last stage of life.¹⁶

2.) The extent to which average life expectancy will continue to increase.

According to the World Health Organization, over 355 million elderly (60+) live in developing countries. Average life expectancy in developing countries has risen to 62 years in 1990, and is forecast to increase to 70 years by 2020, except in those countries, where the HIV/AIDS epidemic is decimating younger populations. In some countries, life expectancies are beginning to extend past 80 years. Researchers are still investigating to what extent maximum life expectancies can continue to increase – an issue that will increasingly affect developing countries with growing middle classes.

Long Term Care Scenarios:

The LTC Futures Toolkit uses four general scenarios of the future as means for users to further test and develop thinking about options for addressing future LTC needs. These scenarios are set in 2020, and provide four different visions of how the future may unfold. The Scenarios provide a brief glimpse of social, economic, political, and environmental influences on the scenario, and a forecast of how each of the thirty forecast areas may turn out under the circumstances of the scenario.

These scenarios describe four different “generic” development paths that could apply to a given developing country. They summarize a variety of literature on development patterns and LTC into broad trends that may play an

¹⁶ *Tim Miller*. Increasing Longevity and Medicare Expenditures.
<http://www.demog.berkeley.edu/~tmiller/papers/p1998.increasing.longevity.pdf>.

important role in shaping LTC over the next 20 years. The scenarios are intended to allow users to speculate about the forces shaping LTC and how they might play out in their country. These scenarios are grounded in quantitative demographic projections that provide a framework for users of the LTC Futures Toolkit to speculate about the future of LTC supply and demand. This quantitative model is spreadsheet based, and allows users to easily tailor the model to more accurately reflect the realities of LTC in a specific country. Customisation of the model can include additional forecast areas, altering the impact of specific forecast areas in scenarios, and even tailoring one or more of the scenarios to include development paths that are more uniquely applicable to a specific country.

Scenario 1: Steady Progress

The stabilization and gradual improvement of the economic system provides a solid foundation for national health systems to address LTC needs. Demographic changes are a continuing challenge, but the process of globalisation has evolved to become more inclusive and less exploitative. This provides an environment of international stability and general prosperity that enables national governments to keep pace with the problems posed by LTC. Advanced developing countries have continued to develop export-based economies with a growing middle class that increasingly demands high standards of medical care. Developing countries in crisis receive grants, loans, and aid from the international community to help alleviate critical health situations. The Scenario reflects the expectation that average life expectancy will rise and peak at a high of 85 years of age, and that a mild compression of morbidity is achievable.

Scenario 2: Crisis and Turmoil

The stress of globalisation exacerbates national tensions, creating new pressures for national health systems. New pressures include hostile climate events, poor economic growth, and internal conflict stemming from differences in income, class, ethnic/tribal identities, and religious differences. These social, political, and economic stresses increase national health burdens, and divert attention from LTC issues. Increasing rates of poverty and disease have compounded the problems associated with the demographic transition, creating higher demand for LTC, without the social resources to address the issue. The Scenario reflects a decline in average life expectancy and increases in disability levels due to health breakdowns and social convulsions.

Scenario 3: Civic Connections

A general global social shift from quantity to quality is reflected by a similar shift in the attitudes of the people towards LTC. The rapid pace of change begins to slow, as the global system begins to consolidate the economic and social gains of the last generation. This process of consolidation forges a greater strength of community ties, and a new emphasis on human connections over technological advancement. In LTC, this emphasis on quality over quantity is reflected in persons with LTC needs placing increased emphasis on improving the quality of life instead of extension of life. The scenario reflects the peaking of average life expectancy at age 85, and a strong compression of morbidity from innovations in LTC and diminishing requirements for end-of-life care.

Scenario 4: Global Transformation

The gains from a climate of global cooperation, with reinvigorated international governance institutions and NGO's that are actively intervening to address global poverty and health disparities. The global challenge of increasing numbers of elderly has become a central feature in aid and development efforts. New preventive measures to improve health allow persons with chronic conditions and disabilities and the young elderly to maintain active and productive lives. These measures and other measures such as increased exercise levels and greater education on the correlation between health risks and behaviour, also delay and diminish the disability levels of the old elderly, gradually decrease the aggregate demand for LTC. The scenario reflects a continuation of trends towards average life expectancy increasing past the age of 85, and a strong compression of morbidity from prevention and innovation in LTC.

Scenario Adjustment

16

The effect of each Scenario on the development of each supply and demand forecast area is assessed using a similar scale of weights that ranges from -5 to +5. Each scenario affects the course of development of each forecast area for LTC in distinct ways, and the model makes a baseline estimate of the extent of impact of each scenario on each forecast using this scale.

Users of the LTC Futures Toolkit may wish to modify the assessments on the potential impacts of each scenario on a specific forecast area. Users can easily change the baseline assessments for each forecast area element in the scenario by shifting the values on the scale from -5 to +5. Each gradation of the scale is a percentage of total supply (full time equivalent LTC workers) or demand (total number of disabled), with each increment amounting to a change of .5 percent of the total in 2010, and 1 percent of the total in 2020.

The scenarios are designed to be a starting off point for a more systematic consideration of the possible futures of LTC. By using four divergent images of the future, it is hoped that the users of the LTC Futures Toolkit will have the opportunity to engage in a more systematic consideration of the threats and opportunities that could shape the future of LTC. Despite the challenges of global aging for the populations of developing countries, the situation contains the seeds of opportunity as well. Since many developing countries have small formal LTC systems, their relative lack of institutional inertia opens the door to new opportunities to design a LTC system from the ground up.

Ethical Consideration in LTC System Design

A major aspect of any policy planning is its ethical underpinning. When considering the design of a better LTC system for the future, it is important to recognize that these discussions do not occur in a value-free vacuum of abstractions. Instead, LTC issues are deeply connected to considerations of ethics and social justice.

The LTC Futures Toolkit has been designed as a framework that supports more systematic debate of the issues related to the rising LTC needs in developing countries. Like any model, it takes the intricate details of the real world and translates them into abstractions (such as "disability", "LTC Supply", "LTC Demand") that give users greater ability to consider these complex issues.

In considering future long term care, a society must first begin a dialogue on how to address the human needs of all of its members, with dignity and respect. After answering the questions of what LTC needs exist and what resources are available to provide them, there needs to be discussion on:

- 1.) What does justice require?
- 2.) Who should provide for these needs?
- 3.) How should the responsibility and burden of care be shared among individuals, families, communities and the State?
- 4.) How should responsibilities be shared between men and women ?
- 5.) How should responsibilities be shared among generations?
- 6.) How should responsibilities be shared among rich and poor countries?

The answers to these questions will then point the way to systems that are fair, responsible, accessible, efficient and accountable.

Fully addressing these questions can move the respect for human dignity to the centre of the LTC policy paradigm. This implies a need to recognize that all people – including those with disabilities – have the right to function as fully as their condition permits.

A recent WHO publication discusses these issues in depth:

(WHO, 2002, Ethical Choices in Long Term Care: What Does Justice Require?, Geneva: World Health Organization, 2002, ISBN 92 9 156228 5).

SUPPLY FACTORS FOR LONG-TERM CARE

The following supply factors for LTC are the areas that users of the LTC Futures toolkit can change to further customize the demographic forecasts of the spreadsheet model. Any given supply factor may – or may not – be significant to the LTC supply situation of a developing country. Instead, these supply factors provide a range of factors that users can selectively judge to be applicable to their LTC situation. There are twelve different supply factors, which are divided into four broad categories:

Family Structure

- **Family Size.** The demographic shift of reduced birth rates, gradually shifting from horizontal families (multiple children and lower life expectancies for adults and elders) towards more vertical family structures (multiple generations with longer life expectancies and fewer children).
- **Availability of Women for Care.** Women are increasingly playing a double role as the default providers of informal LTC, and now have new opportunities and/or duties to work outside the house in the formal economy.
- **Gender Differentials in Life Expectancy.** Elderly spouses are an important source of LTC, however the longer life expectancy for women increases their LTC need.

Social Capital

- **National Leadership.** International and Grassroots groups are providing the impetus for change on LTC issues, but national leadership on LTC issues is important for creating proactive policies
- **Relative Status of Care Giving.** Care giving is traditionally regarded as women’s work, but public education campaigns can help elevate the public appreciation for informal LTC workers and potentially increase the willingness of men to engage in LTC.
- **Perceptions of Disability.** Cultural norms can cause society to minimize the extent and impact of functional disabilities and instead regard their dependency on close family members and others as a condition short of being regarded as a “disability.”

Economic Factors

- **Elderly Workforce Participation.** Participation in the workforce can give people with disabilities supplemental income, as well as give them a sense of purpose through the performance of productive work.
- **Economic Development.** Economic Development is changing family structures, but is increasing the availability of financial resources for the LTC system.

- LTC Funding. Developing nations are still in the process of developing universal social welfare policies, but collective micro-insurance, private care options and other community arrangements fostering mutual support can provide health services in the interim

Caregiver Support

- Family Training. Additional training for informal LTC providers can reduce their anxiety and improve the level of their caregiving.
- Care Resources for Families. Transportation, respite, and day-care services can give informal providers more flexibility in the provision of care.
- Community Based Care. Community based LTC can combine a high standard of care with the enriched social support networks of the community.

Family Structure

Family Size

A global trend with important implication for the availability of informal LTC is the general demographic shift from “horizontal families” to “vertical families”. Horizontal families are traditional family structures of agricultural and indigenous societies, with large numbers of children and limited life expectancies. In horizontal families, additional children can be an economic asset that boosts family productivity and gives parents a financial and care-giving safety net for the last years of their lives. Vertical families are those with smaller numbers of children, longer life expectancy and typically three or more generations in close proximity. Industrialization and globalisation are gradually spreading the vertical family structure geographically, with longer life expectancies and families with fewer numbers of children. While most societies contain a mixture of horizontal and vertical families, the general trend over the next century is towards larger numbers of multi-generation vertical families.

While most vertically structured families can be found in developed countries, urbanization and industrialization are gradually transforming the traditional horizontal family structure. In many developing countries it may take more than 50 years for the vertical family structure to dominate the national demographic landscape. As WHO Director-General Dr. Gro Harlem Brundtland said in her opening speech for World Health Day 1999: “From a developing country perspective, we must be fully aware that while the developed countries became rich before they became old, the developing countries will become old before they become rich.”¹⁷ While this is the general case internationally, in some developing countries – notably China - family planning policies have created an environment where single child-families have already become the norm.

¹⁷ World Health Day - Active ageing makes the difference. http://www.who.int/director-general/speeches/1999/english/19990407_world_health_day.html.

The implication of this widespread shift for LTC is that the reduced numbers of younger family members reduces the availability of informal LTC, and increases the informal LTC care demands that the elderly place on remaining family members. The limited capacity of vertical families to provide LTC places additional pressures on national health systems for the provision of formal LTC or for supplementary support and training for informal LTC providers in vertical families.

While most developing countries do not have fully established social security and social welfare systems for providers, it is likely that these formal systems of elder support can build on traditional value systems of care giving. According to the Overview of the *WHO Symposium on Ageing and Health: A Global Challenge for the 21st Century*: “Experience shows that pioneer schemes are first enacted for privileged groups, government officials, army officers, industrial workers and the like and examples are already in place in many relatively poor countries.”¹⁸ Subsequently these pioneer schemes are likely to spread to larger proportions of the country, as developing countries evolve their systems of social welfare.

The degree to which a developing country has horizontal or vertical family structures can have a significant impact on the design options for future LTC delivery systems. Countries with more horizontal family structures may have a larger pool of informal LTC available from family members and relatives in the local community. Countries with more vertical family structures may desire a greater degree of support from national social systems, but their relatively higher income gives national governments the opportunity to use the tax system to collect revenues that could be used to expand the capacities and scope of the formal LTC system.

Availability of Women for Care

The informal work of women has been a crucial social resource supporting the efficient operation of the formal economy. Their efforts to provide “free” childcare, household management, and informal care for family dependents have typically allowed men to devote their attention to work in the cash economy. This disparity is substantial in the provision of LTC, where women are the dominant providers of care, either as wives helping to care for disabled children or for elderly husbands, or as daughters caring for disabled parents, in-laws and other members of the extended family. The importance of women as LTC care providers extends to the formal care sector, where women make up the great majority of workers who provide direct care to the disabled in hospitals or elderly care facilities.

However, despite the widespread reliance on women for performing informal LTC care within families, women with their own disabilities face additional challenges that can exacerbate their disabling conditions. Disabled women have far fewer opportunities for productive work or gainful employment than a disabled man, giving rise to a perception that disabled women place greater demands on their family caregivers than disabled men do. This can be exacerbated by the lower rates of literacy, economic resources, and access to medical services. One study on women with disabilities in rural areas of the Philippines, for example, found

¹⁸ Michael A. Davies. Ageing and Health in the 21st Century - an Overview.
http://www.who.or.jp/ageing/meetings/1998_11_age&health/6papers1.html.

that more than 80 percent had no independent means of livelihood and were, in fact, totally dependent on others for their very existence. The few who had jobs were grossly underpaid.¹⁹

With globalisation and the continuing process of industrialization and post-industrialization, new social and economic opportunities are becoming available for women. While these new opportunities give women greater personal autonomy and equality, they conflict with the demands of traditional gender roles. However, in areas of developing countries where women have fewer economic opportunities, traditional family structures and social attitudes towards female disability may exacerbate the severity and dependency of disabled women.

As more women begin to question their role as the primary givers of informal LTC, health systems will need to find ways to respond to this pressure in order to ensure that there are adequate social and financial resources for LTC needs. To the extent that rural disabled women become more empowered, they may begin to demand increased levels of support from national or community care resources. However, this potential increase in LTC demand is balanced by the possibility of a corresponding reduction of LTC demand, with disabled women receiving greater amounts of healthcare that could decrease the severity of their disabilities.

Gender Differentials in Life Expectancy

Differences in male and female life expectancies have impacts on the utilization rates of formal and informal LTC by males and females. According to the WHO estimates, at the global level, life expectancy at birth for women is 67.7 and for men 63.4. The picture changes dramatically at the age of 85 years and above. Globally, there are 580,000 males and 1.39 million females at the age of 85 years or above, i.e. 29.44 per cent males and 70.56 per cent females indicating the high survival rate of women over men.²⁰ It remains unclear whether the source of this disparity in health outcomes is due to an inherent genetic difference between the sexes, or to what extent social factors play a role in widening this health disparity.

The LTC impact of this gender difference is that elderly males can commonly rely on informal care from their wives. However, because women have longer life expectancies than men, women often outlive their husbands and are left with no spousal support for LTC. For this reason, elderly women often have a larger demand for LTC from younger family members, or the formal LTC system. New treatments that extend the life expectancies and quality of life for men could help to provide more informal LTC for elderly women and those with minimal social support.

For example, loss of weight among elderly women is seen as “normal” and aesthetically pleasing in Papua New Guinea. Similarly, health studies in Egypt have found that many female medical pathologies are seen as “normal.” In other settings, obesity among elderly women can be regarded as pleasing, although it can increase health risks dramatically.²¹

¹⁹ Hidden Sisters: Women and Girls with Disabilities in the Asian and Pacific Region, Part 2. <http://www.unescap.org/decade/wwd2.htm>.

²⁰ C.A.K. Yesudian.. Socio-economic implications of ageing . http://www.who.or.jp/ageing/meetings/1998_11_1age&health/6papers2.html.

²¹ <http://www.unfpa.org/swp/1998/pdf/chapter4.pdf>.

Increasing awareness of overlooked female medical needs may increase the demand for LTC and medical services among women, and further extend female longevity. Whether better care for women will diminish the severity of LTC needs, or instead extend the need for LTC is an open question that will be answered in the years to come. Whether the longevity gap between men and women can be narrowed or even closed, is another fundamental issue that will have to be addressed in the years to come. Whichever the outcome for either sex, national healthcare systems will have to weigh the complex interactions between lifespan gender differentials, and the availability of informal LTC.

Social Capital

National Leadership

LTC as a policy issue places a special demand on national policy makers to educate the public. Policymakers face a difficult challenge in convincing the public to expend resources in the present in order to reap the benefits in the decades to come. This unwillingness is especially true for LTC, since individuals often do not wish to directly confront the issues of disability, their aging and eventual death. The temptation, for individuals and policymakers alike, is to put off consideration of LTC issues until the issue becomes unavoidable.

In the developed world, the economic and political clout of the elderly has given rise to political organizations such as AARP (formerly called the American Association of Retired Persons), which specifically works to identify and disseminate the preferences and desires of the elderly population. In developing countries political interest groups related to the needs of the elderly are not as prevalent or as powerful, which has allowed issues related to aging to be pushed aside in national policy debates.²²

Compounding this problem is that many international agencies have not integrated global aging or disability issues into their data collection and work. WHO has made some progress in this direction with their Global Burden of Disease Studies; the WHO Ageing, Management of Chronic Conditions, Disability and Long term care Programmes. Other institutions such as the World Bank or IMF have not yet re-oriented their staff structures or programs to adequately capture the dimensions of the epidemiological and demographic transitions of developing countries.²³

However, international disability rights activists are a force that is currently playing an active role in raising awareness of LTC and disability issues. One example is Disabled Peoples' International (DPI), an umbrella organization of

²² Margaret Grieco. Health status and service needs of older persons: a policy framework. *Position paper prepared for the UNFPA technical meeting on Population Ageing, Brussels, October 1998.*

http://www.geocities.com/margaret_grieco/seniorse/popula.html.

²³ Margaret Grieco. Health status and service needs of older persons: a policy framework. *Position paper prepared for the UNFPA technical meeting on Population Ageing, Brussels, October 1998.*

http://www.geocities.com/margaret_grieco/seniorse/popula.html. *The World Bank defends its limited, though important involvement in aging issues with its client countries on the basis that most of the Bank's poorer clients have a relatively young population, so that the current lending program is focused mainly on the needs of the younger age groups, such as poor mothers and children. See also: World Bank Activities and Position on Aging.*

<http://www.un.org/esa/socdev/ageing/worldbank200106.htm>.

national disability organizations founded in 1980 and how has 160 member groups in 160 nations – many from developing nations. The leadership of DPI is international, with the disabled leaders of the organization coming from regions that include the Pacific Rim, Europe, Africa, and America.²⁴

The Arab Organization of Disabled People (AODP) is a similar coalition containing organizations of disabled people in the Arab world. The AODP was founded in Egypt in 1998 and already contains representative organizations from 14 different countries. One of their recent political victories was pressuring the Lebanon government to pass a progressive law for disabled people, giving them full legal access to education, jobs, health services, and transportation.²⁵

In the near term, the momentum to address LTC and disability issues is coming from international NGO's and disability-focused activist organizations. The extent, to which national leadership on LTC and disability issues can develop, can play an important role in shaping future national LTC demands. Without leadership on LTC issues, the range of alternatives for designing an effective LTC system becomes increasingly limited. National leadership for early action on LTC has the threefold benefit of diminishing the disability rate in the future, creating substantial cost savings in the future, as well as opening a dialogue on the values of societies and how these values are best preserved and addressed in long term care..

Relative Status of Care Giving

The social prestige of care giving is a factor affecting the supply of providers of both formal and informal LTC. In most countries informal caregivers do not receive financial compensation for the time and labour spent in care giving. Where family cohesion is high, the provision of LTC by the women in the household is a basic expectation of family life. In some cases the time spent for care giving is time that could be spent doing financially productive work, creating a fiscal opportunity cost for informal caregivers.

As globalisation becomes an increasingly dominant force, with much of the world moving towards market structures, only economic activities that take place outside the home are typically counted as productive; the task of unpaid, home-based caregiving is usually excluded. With a broader view, productivity would be defined as any activity, paid or unpaid, that contributes to a healthy and functioning society. The International Labour Office, a United Nations agency, has already taken a step in this direction by redefining care-giving as work, in the same category as wage labour and self-employment, with their mandates of free choice and decent working conditions. This assertion underscores how unethical it is to treat caregiving as akin to forced labour.²⁶

Finally, care giving professions often have a general perception of being “women’s work”. The common perception being that women are intrinsically more compassionate and better suited to performing this type of work, or that there is something un-masculine about men performing work in this field. This gender

²⁴ Interview with Dr. Nawaf Kabbara. *Disability World*. Issue no. 8 May-June 2001. http://www.disabilityworld.org/07-08_01/il/kabbara.shtml.

²⁵ Globalizing Rights, Not Poverty: An Interview with Joshua Malinga. *Disability World*. Issue no. 8 May-June 2001 http://www.disabilityworld.org/07-08_01/il/malinga.shtml.

²⁶ M. Daly, ed. *Care Work*. Geneva, International Labour Office. 2001.

perception can further shrink the availability of formal and informal LTC, by giving men a social disincentive to perform LTC work.

There are several ways national health systems can intervene to change the incentives for performing LTC work and expand the availability of both formal and informal LTC workers. Effective public education campaigns could both de-stigmatise disability, and boost the social status of performing LTC in the family and community.

One potential model for innovative public health education campaigns of this nature is the Soul City project on HIV/AIDS awareness in South Africa. Soul City embeds public health information on HIV/AIDS within one of the most popular evening television dramas, and supplements these “edutainment” series with educational workbooks that use series characters and events to convey more substantive information on HIV/AIDS issues. Evaluations of the Soul City project show that over 56 percent of people accessing Soul City material discussed the issues it covered with others. In focus groups conducted as part of independent evaluations of Soul City, participants frequently refer to Soul City as a tool to facilitate dialogue around traditionally taboo topics such as sex.²⁷

Soul City’s successful formula of bundling public health education within an entertaining television drama could be expanded to a wider range of disability and LTC issues, creating new opportunities to get the public to address and discuss LTC issues within their own communities and families.

Creative use of the broadcast media is not limited to sophisticated television dramas. For the last twenty years the weekly Nepalese radio program *Hatemalo Sanchar*, has been broadcasting programming designed to increase disability awareness among children. Children help in the production of on-air radio dramas, and assist in the production of a sister print publication *Sunkeshra*. This small-scale education effort provides an empowering message for disabled children, and helps to de-stigmatise their disabilities in the culture at large.²⁸

Though effective public education programs, it can be possible to alter existing gender-based perceptions of LTC work. This could result in greater social appreciation for women who are engaged in LTC work, and increase the willingness of men to engage in LTC work. .

²⁷ Soul City - innovations in media and AIDS. *Urban Health and Development Bulletin – Vol. 3, No. 2, June 2000.* <http://www.mrc.ac.za/urbanbulletin/june2000/soulcity.htm>.

²⁸ Hatemalo Radio Programme – Nepal. *The Communication Initiative Website.* <http://www.comminit.com/pdskdv102002/sld-6553.html>.

Perceptions of Disability

The line between being “able” and “disabled” can vary historically and between cultures. These varying cultural constructions of attitudes towards disability can play an important role in defining the scope of disability within society and the range of effective treatment options for the disabled. While instruments to objectively measure disability such as the WHO International Classification of Functioning, Disability and Health (ICF) is one means to assess disability cross-culturally, the definitions and categorizations of standard measurement may not completely reflect individual and cultural perceptions of disability.

The reporting of disability rates can vary widely between and within developed and developing nations. For example, Australia's 1993 disability survey indicated that persons with a disability comprise 18 percent of its population; and New Zealand's first national household survey in 1996 yielded a disability rate of 19.1 per cent. In contrast, sample surveys in China (1987) and in Pakistan (1984-85) both indicate a 4.9 per cent disability rate. India's disability rate from its 1981 national sample survey is 1.8 per cent.²⁹ Clearly, much of the difference in these disability findings is due to different standards of measuring and reporting disabilities.

Beyond the variations in objective assessment, there are variations in the perceived inability for the disabled to perform the basic activities of daily living. Research into perceptions of disability among the Egyptian elderly found that there were significant differences in the reporting of disabilities among the elderly depending on marital status. Married elderly were less likely to report a disability, as compared to single or widowed elderly, probably because the presence of a spouse reduced the feeling of being unable to perform daily activities.³⁰ Interestingly, level of income did not have a significant impact on willingness to report a disability.

The social context in which a disabled individual is living can play an important role in shaping his or her own self-perception of being “disabled.” Formal objective measurements of disability such as the ICF target the inability to perform specific functional needs as the primary component in disability. However, individuals who can receive informal LTC from close family may not consider themselves as “disabled” because they are not dependent on “outsiders” in order to perform the activities of daily living.

In some cases, the disabled may be unwilling to use services that could improve their autonomy and independence, since they find reliance on informal caregivers to be culturally acceptable and appropriate. For example, a disabled elderly male may reject a device that would make him more independent in eating, because he finds it culturally acceptable to rely on his wife to perform those functions. However, this same man was willing to use a device that could help him shave

²⁹ Asia and the Pacific into the 21st Century: Prospects for Social Development, *Theme Study of the 54th Session of ESCAP, 20-28 April 1998.*

<http://www.unescap.org/theme/part2vi.htm>.

³⁰ A.K. Nadakumar, Ph.D. and Maha El-Adawy, MD, MPH, PH D., Marc A. Cohen, Ph D. Perceptions of Health Status and Limitations in Activities of Daily Living Among the Egyptian Elderly. *December 1998.* <http://www.hsph.harvard.edu/ihs/publications/pdf/No-79.PDF>.

himself without assistance, since being shaved by his wife is an imposition on his sense of masculinity.³¹

Persons with an individualistic worldview may want LTC assistance so that they will be able to live independently in their own dwelling and be economically self-supporting. Persons that abide by collectivist values may want LTC assistance in order to be able to continue living with their family and participate in family tasks and recreation. Thus, diverse views guide one's choice of values and goals.³² The wider social and familiar context in which disability occurs plays an important role in mediating how the elderly with functional disabilities may or may not feel "disabled", if they are being provided informal LTC by close family members.

The degree to which subjective or objective measurements of disability are used by national health care systems can have an impact on the size of LTC supply and demand. By focusing LTC care on providing assistance to persons with functional disabilities, it may be possible to identify more elderly who are in need of LTC services. This would expand the number of individuals who would place demands on national LTC resources. The alternative of adhering to cultural conceptions about disability may decrease the demand for formal LTC, but it has the result of overlooking the health needs of objectively disabled individuals and might provide family caregivers of desperately needed support

Economic Factors

Elderly workforce participation

The rate of the workforce participation among the elderly can have a substantial impact on determining the actual disability ratio for a country. Disability ratio statistics attempt to illustrate the demographic balance between productive workers (typically ages 15/18 to 60/65) and dependent citizens (usually ages 60/65 up). While this basic measure is a useful starting point for planning, the underlying reality is attempting to measure is the actual ratio between citizens performing formal and informal work, and those citizens that are dependent on others for significant aspects of daily living.

There are substantial differences in labour force participation rates between elderly men and elderly women, and between developed and developing countries. For example, rates range from less than 2 percent of elderly men in the workforce in Austria to 85 percent in Malawi. For women, rates range from 1 percent in some developed countries to 29% in the Philippines.³³ What the simple disability ratios fail to capture is that there are significant numbers of people over the age of 60 or 65 that are capable of performing both formal and informal productive work.

³¹ Mary Ann Jezewski, Ph.D. and Paula Sotnik. Culture Brokering: Providing Culturally Competent Rehabilitation Services to Foreign-Born Persons.
http://cirrie.buffalo.edu/cbrokering.html#_Toc523462546.

³² Mary Ann Jezewski, Ph.D. and Paula Sotnik. Culture Brokering: Providing Culturally Competent Rehabilitation Services to Foreign-Born Persons.
http://cirrie.buffalo.edu/cbrokering.html#_Toc523462546.

³³ Ian Darnton-Hill. Round Table - Healthy aging and the quality of life.
<http://www.islamset.com/healnews/aged/Quality.html#2>.

Boosting the capacity of elders to perform productive work later in life, and giving them new opportunities to work in both formal and informal capacities can help the disabled elderly to make a meaningful contribution to their family and community. Integrating the disabled into the wider social and economic life of the community can increase their sense of purpose and perceived quality of life.³⁴

One example that has been successful for the disabled in several countries is the wheelchair-building collectives that have been organized by the Whirlwind Wheelchair Network. This organization has worked with local communities in over a dozen countries to train and educate local disabled workers in the repair and construction of wheelchairs from readily available spare parts. These collectives both expand the supply of appropriate assistive technologies, and open up new work opportunities to disabled workers.³⁵

This model could be extended to the elderly disabled, providing them with new institutions that allow them to continue to make productive contributions to their families and the community. It is also possible that these types of purposeful activities could also improve the health of the elderly, through activities that increase mobility, increase social interaction, and give them a feeling of control over their lives. The ability of productive contributions in either a formal or informal capacity can potentially expand the supply of LTC, with elders providing LTC for other elders in the community.

Economic Development

According to the Overview of the 1998 *WHO Symposium on Ageing and Health: A Global Challenge for the 21st Century*, there are three broad trends related to LTC and economic development:

- The numbers of old persons will increase greatly in the next century, mostly in the developing countries. The old will live longer, more so in the developed countries.
- The health and autonomy of the elderly will continue to improve in proportion to the level of national development. The rich will do best but those in the poorest countries will see little change before the middle of the century and some will be worse off.
- Countries will be obliged to restructure and expand their health and social services to meet the increasing needs and compensate for the declining support of the family.³⁶

³⁴ Ian Darnton-Hill. Round Table - Healthy aging and the quality of life.

<http://www.islamset.com/healnews/aged/Quality.html#2>.

³⁵ Building Wheelchairs, Creating Opportunities. *Technology and Disability – International Perspectives*. Spring 1993 Volume 2, Number 2.

http://whirlwind.sfsu.edu/general_info/news_articles/building_wheelchairs/building_wheelchairs1.html

³⁶ A. Michael Davies. Ageing and Health in the 21st Century - an Overview.

http://www.who.or.jp/ageing/meetings/1998_11_age&health/6papers1.html.

The extent of economic development, both nationally and regionally, can have a significant impact on the availability of formal and informal LTC providers. One part of this issue is that rising family incomes tend to reduce the size of families, leaving fewer children available to provide LTC for their parents. Another aspect is that economic development provides new opportunities for women to participate in the formal economy in non-agricultural jobs. The increased availability of paid employment for women diminishes their capacity to perform informal LTC, but can improve their capacity to afford formal LTC services for their dependent family members.

Economic development also plays an important role in shaping public demand for formal LTC care services. Increased public demand for health system support in providing informal LTC can emerge alongside rising national incomes. With increasing family incomes, the provision of significant amounts of informal LTC by working family members can have a negative effect on overall family income.

While economic development can increase the quantity of economic resources that can be channelled into healthcare, there are important considerations in ensuring that economic development is paralleled with simultaneous development of the healthcare system. More resources devoted to healthcare may have little effect if they are spent in a system with poorly structured incentives. For example, after the 1982 liberalization of the Chinese economy health-care spending increased by 11 percent per annum. Despite this rapid development, there were no further improvements in life expectancy, infant mortality, or the growing disparities in the health of urban and rural populations. This was due in part to a reduction in state subsidies to hospitals, and the partial implementation of fee-for-service care. The rural poor faced new financial barriers that blocked access to care, despite the rapid economic development that was occurring across China.³⁷

Economic development can impact the supply of informal LTC workers by creating new economic opportunities for women outside the traditional family structure. In addition, to the degree that economic development brings about a greater sense of Western individualism, the disabled elderly could make increasing demands for LTC that preserves their personal autonomy. Economic development can do a great deal to alleviate the poverty which is responsible for many of the health problems in developing countries, but health systems must be properly designed to insure that increased resources are allocated in the most effective ways.

LTC Funding

Two critical design issues have been identified as central to the establishment of a national system of LTC.³⁸

- To whom support is to be provided: only to the poor, or also to the non-poor?
- Shall access to services be based on an entitlement, or subject to budget constraints?

³⁷ C. Toh. Impact Of A Free Market System On Medicine In Singapore. *Singapore Medical Journal*. <http://www.sma.org.sg/smj/3801/articles/3801lec1.htm>.

³⁸ WHO. Jenny Brodsky, Jack Habib and Miriam Hirschfeld, eds. Key policy issues in long-term care. Geneva, World Health Organization, 2002, ISBN 92 4 156225.

The way in which national health systems address this issue ultimately shapes the outcomes and performance of a formal LTC system. One certainty in regards to LTC is that there is only a finite amount of resources available to meet the LTC needs of the population. The extent, to which LTC is a state-subsidized entitlement for all, or a targeted social welfare policy for the truly needy, will determine the extent of national resources that need to be devoted to formal LTC care.

While the least dependent can often be supported through informal family funding and provision of LTC, as the degree of dependency and disability increases, family demand for public financial or health service support for caregivers can increase as well. In addition, with greater levels of economic development, an increasing proportion of the public could begin to look towards the government for the provision of elderly support services.

While developed countries have a variety of social insurance systems, developing countries are largely in the initial stages of designing and deploying national social security systems. Only 3 percent of the working population is covered by pensions in Thailand, 11.5 percent in Indonesia, and 22.8 percent in China. In other developing countries in Asia, these figures were correspondingly higher: 50 percent in Sri Lanka, and 53.2 percent in the Philippines.³⁹

One way in which the disabled and the elderly can be personally productive is through organized economic collectives which can engage in small-scale cottage industries, or in secondary agricultural processing, giving the disabled (elderly and otherwise) the chance to engage in productive and meaningful work. This opportunity can give the disabled a means to improve their self-respect, and has the potential to keep them from otherwise relying on charity or begging for survival.⁴⁰

Economic collectives also have the potential to be a source for local collective health care solutions. In one experiment, HealthPartners, a US insurance company, has assisted dairy collectives and micro-credit groups in Uganda to organize local pre-paid healthcare plans. The organizers assess the interest in paid healthcare among the economic collectives, and work with local health providers to establish payment rates and covered benefits. Uganda now has about 10 operational HealthPartners plans covering about 24,000 people, with annual premiums for healthcare costing around \$ 20 dollars a year per person.⁴¹ This type of “Micro Insurance” can provide a degree of medical services while developing countries are in the process of developing more universal national health insurance plans.

While the wealthy have the resources to finance formal LTC for their dependents, the rest of society has little capacity to afford private care options. These types of community based economic collectives can provide a basic form of private health insurance for some of the neediest members of society. The extent to which national health care systems wish to promote or integrate local private health

³⁹ Ong Fon Sim. Ageing in Malaysia: National Policy and Future Direction.

<http://www.adrf.org/gm5/Ageingreport2.asp>.

⁴⁰ Strategies for the rural disabled. SDDimensions, *Sustainable Development Department, Food and Agricultural Organization of the United Nations*. November 1998.

<http://www.fao.org/waicent/faoinfo/sustdev/ppdirect/PPre0061.htm>.

⁴¹ HealthPartners mentors African country. *Minneapolis St. Paul Business Journal*. December 17, 1999 <http://twincities.bizjournals.com/twincities/stories/1999/12/20/story8.html>.

initiatives into the overall healthcare system, can impact the extent to which national financing of LTC care move forward.

Caregiver Support

Family Training

When elderly family members rapidly increase their degree of dependency, it can place a great deal of stress on family caregivers who suddenly have greater responsibilities towards the elders under their care. If these new responsibilities are experienced as being overwhelming for caregivers, it can potentially lead to a diminished quality of care for dependents and Compassion Fatigue among the caretakers.

In the worst cases neglect by caregivers can lead to an acceleration of disability that could require formal healthcare interventions. It can also lead to severe health effects in caregivers. Adequate provision of informal LTC can allow national healthcare systems to more effectively utilize their limited healthcare resources. Greater recognition of the importance of informal caregivers in the provision of LTC can help to maximize the effectiveness of the entire national system of LTC.

One means to help alleviate the anxiety of informal caregivers and increase their competence is to have the health care system ensure that caregivers receive proper training and support in the provision of care. This type of training could either occur in community health centres, or with nurses who can provide in-home training in proper care practices. Improvements in the training of families for the provision of informal LTC can help ensure that care-givers are delivering the highest feasible standard of care, and give them greater confidence in their abilities. Greater involvement by health systems in the training of care-givers can increase the chances that elderly dependents are able to have their LTC needs met by informal care for longer periods of time.

Care Resources for Families

Making care resources available to families on an ongoing basis can be another way in which health systems can provide an additional degree of support to informal LTC caregivers. The demands placed on caregivers to give constant care and supervision can sometimes place heavy demands on care-givers. While in some cases there may be other family available to cover potential gaps in care, in other cases, gaps in care may be unavoidable. Gaps in care can further exacerbate the condition of the person in need, and place additional demands on the LTC system.

Health systems can address this issue by making more care resources available to families on an intermittent and flexible basis. One important service is transportation of a disabled family member to local clinics and care facilities. Easing the inconvenience and cost of bringing the disabled person for medical examinations can increase the frequency of visits, and increase the chances for early treatment of health problems.

Another care resource that can help to relieve the care burdens of families is day care services. Elder day-care in developing countries is commonly provided by nearby relatives from the extended families who are willing to temporarily care for dependent elders. These day-care services tend to be ad hoc and casually

organized, which can cause difficulties for care-givers who have few local relatives and fewer chances to share the burdens of care.

More organized provision of services to informal care-givers can help to maximize the effectiveness of informal LTC. This can help to reduce the demand for formal LTC services, avoid potential gaps in care coverage, and can make it easier for the disabled elderly to get necessary medical attention, and perhaps avoid more significant health complications. These health interventions can improve health outcomes for the dependent, and simultaneously improve quality of life for caregivers as well.

Community Based Care

The use of cost-intensive hospital and nursing facilities for the delivery of formal LTC will face new pressures as the overall demand for LTC increases. While these types of facilities certainly play an important role in the delivery of care for the severely disabled, there are opportunities to create new care institutions that help bridge the divide between costly formal care and the challenges of informal care. Community based care initiatives have the potential to provide the required skills of formal healthcare with the benefits of remaining grounded in the local community.

According to the WHO, “Between 70 percent and 90 percent of illness care takes place within the home. Research evidence clearly indicates that most people would rather be cared for at home and that effective home care improves the quality of life for ill people and their family caregivers.” They define community based care (specifically Community Home Based Care) as any form of care given to sick people in their home, including physical, psychosocial, palliative, and spiritual activities.⁴²

Community based care should ultimately aim at empowerment and use treatment techniques which enable disabled persons to enhance their self-help skills, integrating the informal social environment and formal support mechanisms. Community based care groups can be developed by several different types of organizations: NGOs, faith-based organizations, and local community groups. One continual challenge for community based care groups is securing ongoing funding for the delivery of their care resources. Funding can come in the form of grants from the national government, international aid agencies, NGOs, and faith based organizations. There is also the possibility to develop funding partnerships between government and non-government donor agencies.⁴³

Community based provision of LTC has the potential to provide a high standard of care that fully utilizes the resources of the community to better support and assist a disabled individual. To the extent that non-government sources fund community based care providers, national health care systems can expand the reach of their other health programs proportionally. Even when national health systems have to

⁴² WHO. Community Based Home-Care in Resource Limited Settings: a framework for action. Geneva, World Health Organization, 2002.

http://www.who.int/HIV_AIDS/CARE/Community_HBC2002.pdf

⁴³ WHO. Community Based Home-Care in Resource Limited Settings: a framework for action. Geneva, World Health Organization, 2002.

http://www.who.int/HIV_AIDS/CARE/Community_HBC2002.pdf

SUPPLY FACTORS FOR LONG TERM CARE

bear some or all of the costs of a Community based care program, the ability to use volunteers and community members to deliver services allow for a high degree of care delivery for lower cost.

DEMAND FACTORS

The following demand factors for LTC are the areas that users of the LTC Futures toolkit can change to further customize the demographic forecasts of the spreadsheet model. Any given demand factor may – or may not – be significant to the LTC situation of a developing country. Instead, these demand factors provide a range of factors that users can selectively judge to be applicable to their LTC situation. There are twelve different demand factors, with are divided into four broad categories:

Technologies

- Computing and Communication. The dissemination of low cost communication, including the Internet, is creating new opportunities for enhancing personal and public health.
- Physical Infrastructure. Indoor air pollution from solid fuel stoves poses significant health risks to women and children.
- Genomics. Biotechnology may facilitate the creation of nutritionally enhanced foods and edible food-based vaccines.

33

Environment

- Disability Friendly Design. Appropriate assistive technologies use local craftsmanship to construct devices that meet specific user needs.
- Housing and Urban Planning. Designs for disability friendly housing, access to public transport, public buildings and public toilets make a major difference to the quality of life of persons with disabilities.
- Poverty and Sanitation. Infectious diseases remain as a primary threat to the health of the poor where safe water and sanitation are pre-conditions for change.

Social Risks

- Collective Violence. The impacts of collective violence fall primarily on the poorest populations, yet healthcare workers can play an important role in monitoring the risk factors of collective violence.
- Addictions. Alcohol and tobacco use make large contributions to the global burden of disease, but taxation and controls on the marketing of these products can be an effective tool to curb their abuse.
- Public Safety. Motor vehicle injuries are a contributing factor to increased death and disability levels, but more stringent safety regulations can improve these outcomes.

Personal Lifestyles

- Obesity and Unbalanced Diet. Obesity is a growing health risk in developing countries, even though malnutrition remains a primary health risk.

- Nutrition/Micronutrients. Micronutrient supplementation can control the diseases caused by deficiencies in essential vitamins and minerals
- Exercise and Physical Activity. Physical activity can build strength and endurance and decrease levels of disability incidence.
- Safe Sex. HIV/AIDS and other sexually transmitted diseases cause a major burden in many countries.

Technologies

Computing and Communication

Advances in computing technologies have driven the cost of computers down to the point where they are beginning to have an impact in developing countries. As computing power continues to rise, and prices on computers continue to fall, computing power has already begun to spread throughout the developing world. The emerging capacity for the poorer populations of developing countries to participate and communicate on the Internet creates new possibilities for health education and public health persuasion.

One inexpensive communications tool that is being deployed in Madras, India is a low cost communications network called N-Logue. The company has deployed a system for transmitting wireless services to Internet kiosks and phone centres in 15,000 villages across India. Each connection to a village costs \$300, compared to a \$1,000 charge for a conventional fixed phone line. Although their connections are a bit slower than state-of-the-art technologies, their Internet service is priced at just 3 cents an hour.⁴⁴

Entrepreneurs in India are also developing a sub-\$200 computer called the Simputer, which is designed to be a low- cost Internet connectivity and computing device for the developing world. The machine can currently perform basic computing tasks, as well as connect into the Internet using standard protocols. Future versions of the device will contain support for illiterate users in the form of voice recognition menus for navigating the computers interface and text to speech dictionaries in multiple languages. Other future upgrades to the device will include a smart-card reader that would allow an entire village to securely use a single Simputer for processing micro-credit transactions.⁴⁵

Widespread deployment of these types of small-scale computing and communication technologies creates new conduits for exchanges of health information. Health ministries will have the ability to make public health educational materials – in print, audio, or visual representations – available on demand to rural populations. Rural healthcare workers will have new capacities to receive more expert medical advice and information through these new communication channels. Computing and communication technologies can allow health information and expert knowledge to be disseminated to any rural location

⁴⁴ Small Is Profitable. *Business Week*. August 26, 2000

http://www.businessweek.com/magazine/content/02_34/b3796626.htm.

⁴⁵ 'Simputer' aims at the Developing World. *IDG News Service\Bangalore Bureau*.

<http://www.idg.net/idgns/2000/06/22/SimputerAimsAtTheDevelopingWorld.shtml>.

that is on the network. These new capacities to access public health resources can help to boost preventive healthcare programs and have the potential to increase the likelihood of active ageing and to reduce the demand for LTC.

Physical Infrastructure

One of the most widespread health risks contained in the physical infrastructure of many developing countries is indoor air pollution. This pollution is caused by the use of traditional solid fuels – charcoal, firewood, crop wastes, or dung – for domestic cooking and heating. Burning these fuels in unventilated stoves within the confined spaces of a family dwelling can concentrate the exhaust pollutants at dangerous levels. The toxicity of these emissions is exacerbated by the long durations of exposure that women and children are subjected to during food preparation. Daily exposures to these pollutants can last for hours, or even be continuous in cold and mountainous regions. The cumulative effect of exposure over the course of a lifetime further compounds the negative health impacts of the air pollution. In 1992, the World Bank designated indoor air pollution as one of the top four most critical environmental problems in the world.⁴⁶

Solid biomass fuels remain the primary source of energy for 60 to 90 percent of households in developing countries, creating an at risk population of about 3.5 billion people. There is strong evidence that long-term exposure to these emissions increases the chances of suffering from several respiratory illnesses, including acute lower respiratory infections (ALRI) in children and chronic obstructive pulmonary disease (COPD) in adults. Other studies have suggested that indoor air pollution increases the risk for lung cancer and stillborn and low-weight births.⁴⁷

The pollutants from solid biofuels make a substantial contribution to the global burden of disease. According to WHO estimates, indoor air pollution:⁴⁸

- Is associated with nearly 2 million deaths in 1990, with 1.2 million of these deaths attributable to cases of ARI in children under the age of five,
- Accounts for close to 4.9 percent of deaths, and 4.4 percent of Disability Adjusted Life Years (DALYs) in developing countries,
- Ranks third behind malnutrition (14.9 percent of deaths) and unsafe water (6.7 percent of deaths) as a cause of death, with a negative impact on global health equivalent to that of smoking or unsafe sex.

There are several interventions that can help to diminish the health risks of indoor air pollution. Improved stove designs can use flues to channel smoke out of living quarters, or use sealed combustion chambers that can burn the fuels so that the exhaust is safe. Another alternative is to switch to more efficient and less polluting fuels such as kerosene or LPG. However, the widespread use of bio-

⁴⁶ Health Effects of Air Pollution. *World Resources Institute*. <http://www.wri.org/wri/wr-98-99/airpoll.htm#indoor>.

⁴⁷ Indoor Air Pollution at a Glance. *World Bank Health and Population Advisory Service*. <http://makeashorterlink.com/?C17924182>.

⁴⁸ Kirk R. Smith and Sumi Mehta. Estimating the global burden of disease from indoor air pollution. http://www.who.int/environmental_information/Disburden/wsh00-7/Methodan6-5.htm.

fuels by some of the poorest members of developing nations presents a challenge to efforts to alleviate the health risks of indoor air pollution. Households are often unwilling to bear the expense of alternative fuels or more sophisticated stove designs.

National health systems can address the challenges posed by indoor air pollution by combining health education with organized stove-upgrade programs. In India, the National Program on Improved Cook stoves (NPIC) pursued this course of action. They helped to design more efficient stoves that could be constructed by a local artisan, and helped to subsidize the capital costs of stove upgrades.⁴⁹ While upgrading the stoves of millions of households is a daunting challenge, the benefits of improved respiratory health for millions of women and children makes it an important area of attention for reducing future LTC demand.

Genomics

36

Advances in biotechnology and new capacities to sequence, interpret, and edit the genomes of plants and animals has the potential to enhance the health of developing countries. Although the use of GM crops and animals remains a controversial issue internationally, the promise of biotechnology makes it likely that many developing countries will utilize this technology to improve crop yields, grow more nutritious food, or create new medicines. Already, several developing nations have emerged as leaders in biotechnology. In 1999, China invested \$112 million dollars in biotechnology; followed by India and Brazil which each invested about \$15 million.⁵⁰

The application of biotechnology to agricultural crops has already led to the creation of weed and pest resistant crops that need fewer applications of pesticides and less ploughing. Crops that are now in development by researchers include:

- “Golden Rice” – a GM form of rice that contains a gene to produce Beta Carotene, which is a chemical precursor to Vitamin A.
- Plant varieties allow crops to grow in saline soils that are unsuitable for agriculture. These saline soils are common in the arid areas of India, China, and Pakistan.
- A more nutritious form of protein-rich corn that could be used to increase the protein intake in grain-based diets, or to be used as an enhanced feedstock for farm animals.

A second application of biotechnology that holds great promise is development of “edible vaccines.” These are plants that have been genetically modified to express proteins that can trigger an immune response that mobilizes the immune system. Researchers are currently working on creating edible vaccines to protect against

⁴⁹ Indoor Air Pollution Newsletter. *Issue No. 1; September 2000. World Bank Group South Asia.*
<http://makeashorterlink.com/?E2DA51182>.

⁵⁰ China Leads GM Revolution. *Nature. January 25, 2002.*
<http://www.nature.com/nsu/020121/020121-13.html>.

diarrhoea, cholera, and hepatitis.⁵¹ While these edible vaccines are still in the research and development phase, results so far have been encouraging.

The promise of edible vaccines is that it could reduce the need for needle-based inoculations. Vaccines would no longer have to be produced in sophisticated laboratories or transported in carefully refrigerated containers. Instead, they could be produced, transported, and consumed like standard agricultural products. Reducing the costs of manufacturing and transporting vaccines could open up new possibilities to expand the reach of vaccination in developing countries. Drawbacks include the uncertainty regarding how much “active ingredient” for the vaccine is contained in the fruit, vegetable or milk that it is part of, and ensuring that the right amount of the food carrying it is ingested. Yet, there is the possibility for expanded comprehensive vaccination programs that could dramatically reduce disabilities caused by infectious disease, and improve health outcomes across the developing world.

Another area where genomics has the potential to make a huge impact is in the area of preventing genetically transmitted disease as, for instance, Sickle Cell Anaemia or certain forms of mental handicap.

Environment

37

Disability Friendly Design

Appropriate design of assistive devices for the disabled in developing nations pose unique challenges. In developed nations, sophisticated technologies such as Braille readers, motorized wheelchairs, and computer communication interfaces can give the disabled opportunities to fully participate in the wider community. In poor countries, such technological solutions are often not affordable.

Instead, several successful designs for assistive devices in developing countries have taken a different approach. They have emphasized sensitivity to local cultural practices and local fabrication. One example of this orientation towards local needs is the Jaipur Foot, a prosthetic limb developed in India by Dr. P.K. Sethi. Originally, Dr. Sethi fitted amputees with prosthetic limbs that had been developed in developed countries. After seeing several of his patients eventually reject the prosthesis and return to begging, he questioned them to find out what had gone wrong with the artificial limbs.

Dr. Sethi learned that the prosthetic limbs that had come from developed countries were designed for a chair-sitting culture. His patients instead wanted a more rugged limb that could stand up to abuse and would allow them to sit or squat on the floor. His design for the Jaipur Foot used rugged and simple local materials, yet it also gave users an expanded capacity to participate as a social equal. The Jaipur foot is a sophisticated mechanical device, yet it can be easily fabricated and customized by local craftsmen. This device has since continued in production for over 20 years, with the design gradually evolving and improving.⁵²

⁵¹ Stephen Leahy. Edible Vaccine. *Environmental News Network*. Wednesday, June 27, 2001. http://www.enn.com/news/enn-stories/2001/06/06272001/vaccines_43784.asp.

⁵² The philosophy of the Jaipur Foot and its development. <http://www.jaipurlimb.org/research/research.htm>.

Another example of local fabrication and attention to user experiences is Ralf Hotchkiss and his “Independence through Mobility” book. This book is a set of design plans and a guide for wheelchair construction that can be used by local artisans to help create a wheelchair cottage industry. Hotchkiss has designed a sturdy wheelchair that is ten pounds lighter than similarly featured commercial models. It can be manufactured locally by small groups of skilled mechanics in areas with access to steel tubing and simple welding equipment. A high level of skill is required to build these chairs successfully; a high level of investment is not. It costs approximately \$80 dollars for materials plus the cost, with overhead, of less than a week's work by a skilled mechanic.⁵³

His wheelchair designs take into account the broader context in which wheelchairs are used in developing countries. These riders need wheelchairs that can fold to fit in crowded living quarters or in the aisle of a bus. Many need wheelchairs with folding footrests that allow the rider to pull in close to beds and tables, or specially lowered wheelchairs that allow users sit near the floor and eat and interact with family members.

These two innovative approaches to designing assistive technologies for developing countries use local knowledge and skills to create a product that is of greater use than an equivalent product imported from a developed country. National health systems can support similar initiatives that build on the skills and the creativity of the local community to craft optimal assistance devices for the disabled.

Housing and Urban Design

The availability of housing can play an important role in establishing the living arrangements of the disabled elderly and their family caregivers. Among the Singaporean elderly with at least one child, the majority - 87 per cent - live with a child. 43 per cent live with at least one daughter, but by contrast 70 per cent live with at least one son. Both the male and the female children tend to be unmarried, which may indicate that both generations may benefit from co-residence. Owing to high property costs in Singapore, unmarried children may benefit by living with parents in their home⁵⁴

According to the UN's *Fourth review and appraisal of the implementation of the International Plan of Action on Ageing*, the housing and living environments of older persons have not yet received much attention from the governments in developing countries. Less than one fifth of the developing countries report a housing policy for older persons. Where there is a housing policy, its focus is first on integrated housing for older persons, then on adapted housing, and finally on special segregated housing for older persons.⁵⁵

As populations age in developing countries, the need for adequate housing for the elderly will gradually increase. National governments still have the chance to make plans to provide for the future housing needs of the disabled elderly. By taking advantage of this lead-time to enact policies, national political leaders can

⁵³ Manufacturing assistive devices in developing countries.

<http://www.independentliving.org/toolsforpower/tools32.html>.

⁵⁴ <http://www.unescap.org/pop/journal/1997/v12n4a3.htm>.

⁵⁵ Fourth review and appraisal of the implementation of the International Plan of Action on Ageing
UN Division for Social Michel Guellot. Policy and Development.
<http://www.un.org/esa/socdev/ageing/age4ra01.htm>.

adopt policies today that will expand the availability of accessible housing in the future.

Design for the disabled is not just limited to assistive devices. The entire environmental design of cities and buildings plays an important role in the life of the disabled, shaping their ability to "live normal lives". Restrictions and barriers in the urban environment – such as curbs, stairs, or lack of hand-rails – define the extent to which the disabled are able to use public spaces. These restrictions are beyond the control of the disabled, and are the responsibility of the society at large. Thus, public and private spaces must be conceived to emphasize people's abilities and help to minimise their limitations.

This can be achieved by the practices of "universal design" which aim to design products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. Universal design can help to create a society that is more "age-friendly", but also creates an infrastructure that can assist the disabled – both permanent and temporary – of all ages. Integration of universal design into the early phases of construction projects can help to create a disability-friendly built environment, with only a marginal increase in the cost of construction. These types of environments can give the disabled greater autonomy, mobility, and quality of life, and has the potential benefit of reducing the demand for LTC care-giving.

Adapting existing buildings to make them accessible to the disabled can be an expensive proposition. It is less expensive to plan accessibility for persons with disabilities in *new* construction. If provisions for disability access are integrated into the urban planning process, including public transport, cost can be reduced. Environments which are safe and accessible to persons with disabilities are also far more safe for all.

Poverty and Sanitation

Communicable disease and injuries remain the primary health risk for the poor in developing countries. The lower one's socioeconomic status, the more predominant communicable disease becomes among their health risks. Conversely, with increasing wealth comes a greater health risk from non-communicable disease. The poor face a different set of health risks than those faced by the other classes of society:⁵⁶

- Communicable diseases are concentrated among the global poor, accounting for 56 percent of deaths and 63.5 percent of lost DALYs. This death rate of the poor is higher than that of the Global population as a whole (34.2 percent) and higher than that of the wealthy (7.7 percent).
- Non-communicable conditions are still important for the global poor with the poor suffering 32 percent of the deaths caused by non-communicable disease.
- The poor are also at higher risk for injuries and are more likely to have long term consequences of these injuries.

⁵⁶ David Watkin and Michel Guellot. *The Burden of Disease Among the Global Poor*. World Bank Human Development Network. <http://www.worldbank.org/poverty/health/library/burden.pdf>.

Although non-communicable diseases are gaining increased public attention as a significant aspect of the global burden of disease, infectious diseases still remain the most important threat to the health and well being for the poor.⁵⁷ Many of these diseases stem from the lack of access to clean water and sanitation facilities among the most poor. At the beginning of 2000 one-sixth (1.1 billion people) of the world's population was without access to improved water supply and two-fifths (2.4 billion people) lacked access to improved sanitation. The majority of these people live in Asia and Africa, where fewer than one-half of all Asians have access to improved sanitation and two out of five Africans lack improved water supply.⁵⁸

The health impacts of inadequate water and sanitation can be widespread among the poorest of the population. Intestinal worms infect about 10 percent of the population of the developing world. Intestinal parasitic infections can lead to malnutrition, anemia and retarded growth, depending upon the severity of the infection. It is estimated that 6 million people are blind from trachoma and the population at risk from this disease is approximately 500 million. 200 million people in the world are infected with schistosomiasis, of whom 20 million suffer severe consequences. The disease is still found in 74 countries of the world.⁵⁹

Waterborne diseases such as lymphatic filariasis and onchocerciasis cause severe disabling conditions (as elephantiasis and blindness). The prevalence of these diseases, as well as the disabilities they can cause, can be controlled through better sanitation, hygiene and water supplies for both urban and rural populations.

National health care systems have a broader mandate when it comes to the poor; they not only have to address the health needs of the poor, but also need to find ways to deliver medical services to the most vulnerable members of the community. The poor have the greatest risk of developing medical conditions that could lead to a disability and the need for LTC. By focusing on the health needs of the poor, national healthcare systems can reduce national demand for LTC and equitably distribute health resources to the most needy.

Social Risks

Collective Violence

Collective Violence is defined by the WHO as: “the instrumental use of violence by people who identify themselves as members of a group –whether this group is transitory or has a more permanent identity – against another group of individuals, in order to achieve political, economic, or social objectives.”⁶⁰ The 20th century

⁵⁷ David Watkin and Michel Guellot. *The Burden of Disease Among the Global Poor. World Bank Human Development Network.* <http://www.worldbank.org/poverty/health/library/burden.pdf>.

⁵⁸ WHO, Global Water Supply and Sanitation Assessment 2000 Report, *WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, 2000.* (ISBN 92 4 156202 1) http://www.who.int/water_sanitation_health/Globassessment/GlobalTOC.htm.

⁵⁹ WHO, Global Water Supply and Sanitation Assessment 2000 Report, *WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, 2000.* (ISBN 92 4 156202 1) http://www.who.int/water_sanitation_health/Globassessment/GlobalTOC.htm.

⁶⁰ WHO. *Collective Violence Facts. Geneva, World Health Organization, 2002.* http://www5.who.int/violence_injury_prevention/download.cfm?id=0000000566.

has been filled with multiple examples of ethnic genocide, global war, and low intensity conflicts. While a delicate web of international treaties currently provides a framework for international peace and cooperation, the past legacies of conflict still remain in the 21st century.

One continuing legacy of violent age is the millions of landmines that have been strewn throughout regions engaged in territorial conflicts. The United Nations has estimated that there are more than 110 million mines buried in the ground in more than 70 countries and there are an estimated 25,000 mine-related casualties worldwide each year. Most of the mines are in some 70 developing nations, with the greatest numbers in Egypt with 23 million unexploded mines, Iran with 16 million, and Angola with 15 million. Other countries struggling with landmines include Afghanistan, Cambodia, China and Iraq (with 10 million each), Bosnia-Herzegovina (6 million), Vietnam (3.5 million) and Croatia and Mozambique (3 million each).⁶¹ These millions of landmines will continue to injure and maim civilians for generations to come, creating additional disability demands and obstacles to future economic development.

The spectre of war remains as a potential health threat for millions of people in developing countries. WHO estimates that 310,000 individuals died from war-related injuries during the year 2000. The region that suffered the greatest casualties from this conflict was the WHO African region, which had an average of 32 war related deaths per 100,000 population, while highly developed nations only had war casualties of less than 1 per 100,000 population.⁶²

While it can seem that war and ethnic conflicts are political issues that are outside the purview of national health systems, the health risks posed by collective violence are serious enough to warrant action. The 2002 WHO Report on Violence and Health identified several risk factors for an eruption of organized violence:⁶³

- Lack of democratic processes and unequal access to power. This power imbalance can be further exacerbated when power imbalances are rooted in religious or ethnic identity, or repressive governments that ignore fundamental human rights.
- Social inequality that is the result of unequal distribution and access to resources. This condition of inequality can tip over into violence when the economy contracts and competition for scarce resources intensifies.
- Control of valuable natural resources by a single group.
- Rapid demographic changes that outpace the ability of national governments to provide an acceptable level of social services.

Each of these risk factors is a relatively gradual process that can be tracked and monitored by interested observers. While it is up to national leaders to implement conflict-reducing policies that support greater international cooperation and social justice, workers and managers in the healthcare system can play an important role in gathering information on changes in collective violence risk factors for national

⁶¹ Disarmament: Landmines Block Development. <http://www.oneworld.net/ips2/sep/landmines.html>.

⁶² WHO. Collective Violence Facts. Geneva, World Health Organization, 2002. http://www5.who.int/violence_injury_prevention/download.cfm?id=0000000566.

⁶³ WHO. First World Report on Violence and Health. Geneva, World Health Organization, 2002. in Chapter 8, p.220. http://www5.who.int/violence_injury_prevention/download.cfm?id=0000000484.

leaders, and work in the community to help minimize outbreaks of collective violence, thereby reducing future demands for LTC.

Addictions

Alcohol and tobacco are both socially sanctioned recreational drugs that make a substantial contribution to the disease burden in developing countries. Although tobacco causes a greater number of premature deaths, alcohol has a greater impact than tobacco when Disability Life Years (DALYs) are the unit of measurement. The Global Burden of Disease Study found that in 1990 alcohol was responsible for 3.5 percent of all DALYs – more than either tobacco or illegal drugs. This is because the acute health consequences of alcohol related traumas are far more common among younger people.⁶⁴

The health consequences of alcohol abuse are manifested in two different ways. The first category consists of the primary health effects that are due to long-term alcohol abuse. The second category consists of the negative effects of alcohol on both the individual and society. This includes alcohol related crime, traffic accidents, accidental death, and violence. Youth drinking in developing countries is beginning to mirror the binge drinking patterns of youth in developed countries. Multinational beverage companies have been able to promote alcoholic beverages using sophisticated advertising and marketing campaigns in a relatively unregulated environment.⁶⁵

Despite the DALYs incurred by alcohol related injuries, tobacco addiction and abuse affect a wider number of people in the developing world. It is currently estimated that tobacco causes nearly 1 million deaths a year in developing countries. If current trends continue, and if the risks of death from tobacco use are similar in developing countries to the risks that have been observed in the industrialized world, then the annual toll of mortality from tobacco will rise dramatically to around 7 million deaths per year in the 2020s or early 2030s.⁶⁶

Between 1950 and 2000, it is estimated that smoking caused nearly 62 million deaths in developed countries (12.5 percent of all deaths: 20 percent of male deaths and 4 percent of female deaths). More than half of these deaths (38 million) will occur between ages 35 and 69. Currently, smoking is the cause of more than one in three (36 percent) male deaths in middle age, and about one in eight (1 percent) of female deaths.⁶⁷

WHO estimates that there are currently about 1.1 billion smokers in the world. About 300 million (200 million males and 100 million females) are in developed countries, and nearly three times as many (800 million: 700 million males and 100 million females), in developing countries. In developed countries, 41 percent of

⁶⁴ WHO. David Jernigan.. Global Status Report: Alcohol and Young People. http://www.who.int/substance_abuse/PDFfiles/globsta_alcoveyoung%20people.pdf.

⁶⁵ WHO. David Jernigan.. Global Status Report: Alcohol and Young People. http://www.who.int/substance_abuse/PDFfiles/globsta_alcoveyoung%20people.pdf.

⁶⁶ WHO. Worldwide trends in tobacco consumption and mortality. Geneva, World Health Organization. <http://www.druglibrary.org/schaffer/tobacco/who-tobacco.htm>.

⁶⁷ WHO. Worldwide trends in tobacco consumption and mortality. Geneva, World Health Organization. <http://www.druglibrary.org/schaffer/tobacco/who-tobacco.htm>.

men are regular smokers, as are 21 percent of women. Half the men living in developing countries are smokers, compared with about 8 percent of women.⁶⁸

National health systems will need to address alcohol and tobacco abuse if they wish to avoid the high costs and social harms caused by widespread use of alcohol and tobacco. One strategy that has been proposed to control both alcohol and tobacco is to place stricter restrictions on the sales and marketing practices of the multinational beverage and tobacco companies. By limiting the extent to which these companies can romanticize their products to the young, public health authorities have a greater opportunity to disseminate educational information on tobacco and alcohol abuse. Increasing social awareness of the risks and health consequences of abusing alcohol and tobacco can be an effective strategy to mitigate the harm caused by these addictive products.

Another strategy is raising alcohol and tobacco taxes. While this measure is effective in curbing consumption, it becomes, in addition, a potential revenue for health and LTC services.

Public Safety

Injuries – which are categorized as physical damage to the body - account for more than 5 million deaths annually. Although injuries can range from suicides, homicides, and accidents, it is motor vehicle crashes that represent the largest single cause of all injury-related deaths worldwide. Among adults ages 15-44 worldwide, motor vehicle crashes were the leading cause of death for males and the fifth cause of death for females.⁶⁹

Increasing motorization is the leading contributor to this rise in motor vehicle crash deaths, and can be seen most clearly in developing countries where large motor vehicles such as cars, trucks, and buses, share the road with pedestrians, bicyclists, and motorcyclists. For example, in Ethiopia 84 percent of persons killed in motor vehicle accidents were pedestrians; in Indonesia, one third of persons killed in motor vehicle crashes were riding motorcycles or motor scooters. In comparison, pedestrians represented only 14 percent of persons killed in motor vehicle crashes in the United States in 1998.⁷⁰

If current trends continue, by 2020, road traffic accidents will be ranked as the third leading cause of disease burden measured in disability-adjusted life years.⁷¹ Quadriplegia, paraplegia, brain damage and behavioural disorders are among the disabilities common among survivors of such accidents. Most at risk in those accidents to come will be men aged 15 to 44.

Improvements in vehicle design, as well as stronger enforcement of regulations concerning the compulsory use of seat belts and helmets (motorcycle use), and restrictions on alcohol consumption and other substance abuse combined with

⁶⁸ WHO. Worldwide trends in tobacco consumption and mortality. Geneva, World Health Organization. <http://www.druglibrary.org/schaffer/tobacco/who-tobacco.htm>.

⁶⁹ Injury: An Overlooked Global Health Concern. *Journal of the American Medical Association*. Vol. 284 No. 8, August 23/30, 2000. <http://jama.ama-assn.org/issues/v284n8/full/jsg00001-1.html>.

⁷⁰ Injury: An Overlooked Global Health Concern. *Journal of the American Medical Association*. Vol. 284 No. 8, August 23/30, 2000. <http://jama.ama-assn.org/issues/v284n8/full/jsg00001-1.html>.

⁷¹ WHO. Facts About Injuries: Preventing Global Injuries. Geneva, World Health Organization, 2000. <http://www.who.int/mipfiles/2011/Primer6.pdf>.

driving, will mean greater chances of survival from road accidents, and these should therefore be encouraged.⁷²

For the health care systems of developing countries, injury prevention can be improved by adopting several of the health regulations that have been effective in developed countries. Improved vehicle designs, seat-belt laws, motorcycle helmet laws, designated drivers, fire resistant clothing, and fire alarms have all successfully diminished the incidence of injuries in developed countries.⁷³ Coordinated injury prevention strategies can play an important role in changing the fatalistic perception that these types of injuries are a normal part of daily life. Prevention campaigns in developing countries can reduce the frequency and severity of injuries, and play a role in the reduction of overall demand for LTC from the health care system.

Personal Lifestyles

Obesity and Unbalanced Diet

Even though many developing nations are still struggling with the challenges posed by malnutrition, several developing nations are beginning to face increasing rates of obesity and other aspects of unbalanced nutrition. Thus countries face a dual problem of insuring that the poor receive adequate levels of appropriate nutrition, while urging everyone to moderate their intake of fats and sugars. While the dietary health risks (especially high intake of saturated fats, salt and sugar) have only started to manifest themselves in poor countries, a growing incidence of nutrition related diseases, like heart disease and type 2 diabetes is already observable.

A 1999 United Nations study found obesity in all developing regions, is growing rapidly, even in countries where hunger exists. In China, the number of overweight people jumped from less than 10 percent to 15 percent in just three years. In Brazil and Colombia, the figure hovers around 40 percent - a level that is comparable to several European countries.⁷⁴ In addition, high salt intake leading to high blood pressure and high saturated fat intake leading to high blood cholesterol cause an enormous amount of disease even without obesity.

Part of the reason for the upward spike in obesity rates in the developing world is a dietary shift towards eating more fats and sugars. For example, during the 1970's the average fat content in the Chinese diet was nearly 10 percent. By the 1990's, one third of Chinese families were eating high-fat diets with upwards of 30 percent fat content, primarily from edible oils.

Economic changes and marketing in developing countries encourage and allow people to have a more varied diet – and animal fats and sugars are becoming an increasing proportion of this dietary change. Compounding the problem are changes in labour from manual agricultural work to more sedentary jobs that

⁷² Asia and the Pacific into the 21st Century: Prospects for Social Development *Theme Study of the 54th Session of ESCAP, 20-28 April 1998*. <http://www.unescap.org/theme/part2vi.htm>.

⁷³ WHO. Facts About Injuries: Preventing Global Injuries. Geneva, World Health Organization, 2000. <http://www.who.int/mipfiles/2011/Primer6.pdf>.

⁷⁴ The Developing World's New Burden: Obesity. *Food and Agriculture Association of the United Nations (FAO)*. <http://www.fao.org/FOCUS/E/obesity/obes1.htm>.

require less energy expenditure. Changes in leisure activities, reflected in expanding rates of television ownership and viewing, are contributing to a more sedentary lifestyle as well.⁷⁵

Developing countries facing increasing rates of obesity and nutrition related diseases have a dual problem of insuring that the poor receive adequate levels of appropriate nutrition, while urging everyone to moderate their intake of fats and sugars. At the centre of this dichotomy in dietary health is the need for proper nutrition for all.

Nutrition/Micronutrients

The human body requires small amounts of essential vitamins (vitamin A and folic acid) and minerals (iodine, iron and zinc) for healthy growth and development. More than half the world's population, rich and poor, urban and rural, do not consume enough of these nutrients in their normal diet. These micronutrient deficiencies can have dramatic impacts on national rates of disability incidence. Clinical manifestations of micronutrient deficiencies include childhood and maternal death, lowered immune response, blindness, mental retardation, and anaemia and affect over 500 million people globally.

Another two billion people throughout the socioeconomic spectrum are marginally deficient in micronutrients and unable to achieve their mental and physical potential as parents, workers and citizens. Correcting micronutrient deficiencies can reduce maternal deaths by one third, decrease infant and childhood mortality by 40 percent, increase strength and work capacity by 40 percent, eliminate nutritional blindness, and reduce the incidence of birth defects, stillbirths and congenital deafness.⁷⁶

UNICEF leads a group that has developed strategies to curb these types of micronutrient child malnutrition. Short-term strategies include the bi-annual distribution of vitamin A capsules to young children and lactating mothers, and the distribution of iron supplements to pregnant women. Long-term strategies include nation-wide salt iodisation, and nutritional education for mothers and children. With the assistance of UNICEF, the government of Viet Nam has provided vitamin A to nearly all Vietnamese children. In addition, the proportion of households consuming iodised salt has increased to 65 percent⁷⁷

For national health systems, addressing major vitamin deficiencies can be an important means to reduce the incidence of disability among children. More widespread use of micronutrient supplementation can reduce the risks for major chronic diseases and help improve general population health.

Researchers have noted that in most countries people are not eating the recommended five daily servings of vegetables, and as a result were not consuming optimal quantities of essential vitamins. Inadequate levels of antioxidant vitamins A, C and E could increase heart disease and cancer risks; low

⁷⁵ Epidemic of Obesity Expands Its Spread to Developing Countries. *JAMA Medical News and Perspectives*. Vol. 287 No. 11, March 20, 2002.

<http://jama.ama-assn.org/issues/v287n11/full/jmn0320-2.html>.

⁷⁶ The Problem: A Human Tragedy and Socio-Economic Stagnation. *PAMM*.

<http://www.sph.emory.edu/PAMM/problem.htm>.

⁷⁷ Solving the Malnutrition Problem in Vietnam <http://www.unicef.org/vietnam/nutri003.htm>.

levels of folic acid and vitamins B6 and B12 could be risk factors for the heart and that inadequate vitamin D intake could contribute to osteoporosis and bone fractures.

Beyond vitamin deficiencies, medical researchers are increasingly interested in the role of vitamins in disease prevention and health promotion. While large trials with vitamin supplementation have resulted in mixed experiences, the medical community agrees that the best way to ensure good vitamin and micronutrient intake is through a balanced, healthy diet, and especially through adequate intake of fruits and vegetables.

Exercise and Physical Activity

Exercise is an important factor in the healthy ageing of all people. In developed countries, sedentary lifestyles and physical inactivity lead to increased risks for cardiovascular disease, diabetes, and muscle weakness and frailty. While it used to be conventional wisdom that muscle atrophy in older persons was irreversible, a pioneering study performed by Tufts University found that resistance strength training brought significant gains in muscle strength, size, and mobility, even in very old and frail nursing home residents.

The researchers showed substantial increases in physical functioning in the very aged - those over 90 years old - who participated in resistance training. Resistance training helps to reduce the muscle atrophy and bone loss that accompany aging in older adults. Lower extremity resistance training was found to be especially beneficial, since it increases strength, balance, and bone mass. This provides excellent protection against falls and hip fracture, one of the leading causes of physical disability in older adults. In addition to weight training, simple aerobic exercises like walking, callisthenics, or stretching exercises can improve cardiovascular capacity, mobility, and balance.

Exercise for older persons can be a very cost effective form of preventive healthcare. Many beneficial exercises can be performed without the need for equipment, and even activities such as resistance weight training can be performed with readily available objects. Sports can provide another way for older persons to get beneficial amounts of exercise. According to the WHO, several of the barriers to increased levels of exercise among older persons include:⁷⁸

- Lack of information about the health benefits of exercise among the elderly, family members, health providers, and society in general,
- Stereotypical images of aging,
- Low social support.

These barriers to increased physical activity among the elderly can be overcome by public health education on the health benefits of exercise and active lifestyles among older people. National health systems can play an important role in promoting exercise to older people, developing and disseminating culturally and physically appropriate exercise guides, and subsidizing the organization of walking, sport, and exercise clubs. Increased levels of exercise can decrease levels of disability incidence and lower the demand for the LTC services. However, if

⁷⁸ WHO. The Heidelberg Guidelines for Promoting Physical Health Among the Elderly. *WHO Aging and Health Programme*, 1996. http://www.who.int/hpr/ageing/heidelberg_eng.pdf.

developing countries adopt the sedentary lifestyles of older people in the developing world, they incur the risk of an increasing disability incidence, and a rise in demand for LTC.⁷⁹

Safe Sex

The sexual transmission of diseases is becoming an increasing cause of death and disability in developing countries. The spread of HIV/AIDS in developing countries and the high expense of HIV treatment therapies exacerbate the potential for HIV/AIDS to become an even more significant cause of disability in the developing world. One of the first attempts to quantify the global health impact of HIV/AIDS was the WHO study, *Health Dimensions of Sex and Reproduction*, the third volume in the Global Burden of Disease and Injury series, which attempted to calculate how much of the burden of disease is caused by unsafe sex. This study showed that in 1990, unsafe sexual activity accounted for over one million deaths (2 percent of all adult deaths worldwide) and for almost 50 million disability-adjusted life years (3.5 percent% of the total DALYs lost).⁸⁰

More recent research has shown that HIV/AIDS continues to accelerate as a major cause of disease in the developing world. According to a recent WHO/UNAIDS report, *AIDS Epidemic Update, December 2002*, unsafe sex is ranked second among the top ten risk factors to health in terms of its contribution to the burden of disease. Globally, the report finds that 42 million people are now living with HIV, 95 percent of them in the developing world and half of them younger than 25 years of age. Africa and Asia continue to bear the heaviest burden of HIV/AIDS. In sub-Saharan Africa, the epidemic continues to expand. An estimated 3.5 million new infections occurred in 2002, and 2.4 million Africans died of the disease. In Asia, 7.2 million people are now living with HIV. It is estimated that in the absence a massive international health initiative another 45 million people will be infected with HIV by 2010.⁸¹

The global distribution of HIV positive individuals is also primarily occurring in the developing world. According to the most recent statistics in *AIDS Epidemic Update, December 2002*, HIV positive people numbered⁸²

- 29.4 million in Sub-Saharan Africa
- 6 million in South and South-East Asia
- 1.2 million in Eastern Europe and Central Asia
- 1.2 million in Latin America

⁷⁹ Physical Activity for Active Aging. A Regional Guide for Promoting Physical Activity. Washington, Pan American Health Organization and World Health Organization, 2002. ISBN 92 75 12399 3 and www.paho.org and www.bireme.br.

⁸⁰ WHO. Christopher J L Murray and Alan D Lopez, eds. Health Dimensions of Sex and Reproduction: the Global Burden of Sexually Transmitted Diseases, HIV, Maternal Conditions, Perinatal Disorders and Congenital Anomalies, ISBN 0-674-38335-.

⁸¹ WHO, AIDS Epidemic Update: December 2002, Joint United Nations Programme on ISBN 92 9173 253 2 (<http://www.who.int/hiv/pub/epidemiology/epi2002/en/>)

⁸² WHO, AIDS Epidemic Update: December 2002, Joint United Nations Programme on ISBN 92 9173 253 2 (<http://www.who.int/hiv/pub/epidemiology/epi2002/en/>)

DEMAND FACTORS

- 1.2 million in East Asia and the Pacific
- 980,000 in North America
- 570,000 in Western Europe
- 550,000 in North Africa and the Middle East
- 440,000 in the Caribbean
- 15,000 in Australia and New Zealand

However, despite the possibility of a doubling of HIV infection over the next decade, there is some evidence that public health interventions can play an important role in reducing the transmission and rates of HIV/AIDS infections. Health initiatives in South Africa and Ethiopia have demonstrated that awareness campaigns and prevention programs that have been launched in recent years are starting to have an impact, particularly among young people. In South Africa, the number of pregnant women under age 20 who are HIV-positive fell to 15.4 percent in 2001, compared to 21 percent in 1998. In Ethiopia, the HIV rate also appears to be in decline among young inner-city women in the capital, Addis Ababa. Similar findings have also been found in Zambia, and in 2002 Uganda has demonstrated success in reducing new HIV infections in several parts of the country. In Asia, the country in the region with the highest proportion of adults living with AIDS – Cambodia – has stopped the growth of their rate of HIV infection. This was a direct result of a sustained national prevention program, which also reduced HIV infections among sex workers from 42 percent in 1998 to 29 percent in 2002. The decline was most dramatic among sex workers under the age of 20.

With an effective and inexpensive vaccine or cure for HIV/AIDS years – or perhaps decades – away, health systems are limited to taking preventive steps to reduce transmission of the disease. This can involve extensive public education on safe sex practices and the subsidization and distribution of condoms. Disabilities induced by AIDS have the potential to strike younger people, causing years of disability and dependence before death. Health systems in developing countries could face and even larger amount of AIDS-induced disability in the years to come.

There is also an urgent need to support old people, who carry a huge burden, caring for AIDS orphans, as documented in a recent WHO study (Impact of AIDS on Older People in Africa; Zimbabwe Case Study, Geneva: WHO, 2002, WHO/NMH/NPH/ALC/02.12).

USING THE LONG TERM CARE FUTURES TOOLKIT

The LTC Futures Toolkit is designed to help to facilitate strategic discussions among policymakers and other stakeholders involved in LTC, primarily in developing countries. The toolkit uses quantitative forecasts as the starting point for further consideration of LTC issues in a given country. These forecasts are not just static predictions of future LTC demand. Instead, these forecasts are encapsulated within a dynamic context that allows users to modify or adjust parameters of the model. This allows the users of the model to make it more reflective of the specific environment of LTC within a given country, and test alternative hypotheses about future LTC approaches.

Ultimately, the real value for this futures toolkit is in the ideas and insights that users can generate through a structured consideration of LTC. The forecasts and scenarios of the LTC Futures Toolkit model are primarily a means to project and test future possibilities. By addressing these alternative possibilities of LTC supply and demand, users of the Toolkit can contribute and share their own ideas of how to design a better LTC system that can deliver fair, effective and affordable quality care in a changing world.

The following section will illustrate how users engage in "future gazing" and use the model, in group discussions, referring to a hypothetical country (Country X) used as the model in this demonstration exercise.

Country Selection

The initial step in using the LTC Futures Toolkit is to select a country to examine. Country selection takes place on the Country Selection tab of the spreadsheet. After opening up this screen, on the top will be a listing of Regions on the left; a data table for the selected country on the right, and listings of available countries down below.

Figure 1: View of the *Country Selection* Tab

Regions		Selected Country : Country X											
		prevalence (thousands) by age in years						population	prevalence	proportion	dependency		
		year	0-4y	5-14y	15-44y	45-59y	60+y	total	(thousands)	increase %	total pop. %	ratio (%)	
<u>Sub Saharan Africa</u>		Country X	2000	35.3	55.7	593.6	191.1	194.2	1,069.2	24,965.6	0	4.3	7.5
<u>Other Asia & Islands</u>		Country X	2010	34.6	58.1	732.4	273.7	278.3	1,377.2	29,663.1	29	4.6	7.6
<u>Middle Eastern Crescent</u>		Country X	2020	31.3	54.6	846.7	364.2	423.4	1,720.4	33,470.0	61	5.1	8.0
<u>Former Socialist Countries of Europe</u>		Country X	2030	33.5	52.7	892.8	470.9	619.5	2,069.4	37,149.8	94	5.6	8.7
<u>Latin America & Caribbean</u>		Country X	2040	32.0	54.7	881.6	579.5	866.1	2,413.9	40,211.1	126	6.0	9.7
<u>Established Market Economies</u>		Country X	2050	31.1	51.6	864.1	641.1	1,159.1	2,747.2	42,366.5	157	6.5	10.8
<u>People's Republic of China</u>													
<u>India</u>													

Sub Saharan Africa	
<input type="checkbox"/>	Angola
<input type="checkbox"/>	Benin
<input type="checkbox"/>	Botswana
<input type="checkbox"/>	Burkina Faso
<input type="checkbox"/>	Burundi
<input type="checkbox"/>	Cameroon
<input type="checkbox"/>	Cape Verde
<input type="checkbox"/>	Central African Republic
<input type="checkbox"/>	Chad
<input type="checkbox"/>	Comoros
<input type="checkbox"/>	Congo
<input type="checkbox"/>	Congo, DR
<input type="checkbox"/>	Côte d'Ivoire
<input type="checkbox"/>	Djibouti
<input type="checkbox"/>	Eq. Guinea
<input type="checkbox"/>	Eritrea
<input type="checkbox"/>	Ethiopia

The eight Regions are the same regions in the WHO 1990 *Global Burden of Disease*⁸³ study, and individual countries are listed alphabetically within each region:

Figure 2: List of Toolkit Countries by GBD Region

<i>LTC Futures Toolkit Regions and Countries</i>							
Sub Saharan Africa	Other Asia and Islands	Middle Eastern Crescent	Former Socialist Countries of Europe	Latin American and Caribbean	Established Market Economies	Peoples Republic of China	India
Angola	Bangladesh	Afghanistan	Albania	Argentina	Australia	China	India
Benin	Bhutan	Algeria	Belarus	Bahamas	Austria		
Botswana	Brunei	Armenia	Bosnia & Herzegovina	Barbados	Belgium		
Burkina Faso	Cambodia	Azerbaijan	Bulgaria	Belize	Canada		
Burundi	East Timor	Bahrain	Croatia	Bolivia	Channel Isls.		
Cameroon	Fiji	Egypt	Czech-Republic	Brazil	Denmark		
Cape Verde	French-Polynesia	Georgia	Estonia	Chile	Finland		
Central African-Republic	Guam	Iran	Hungary	Colombia	France		
Chad	Hong Kong	Iraq	Latvia	Costa Rica	Germany		
Comoros	Indonesia	Israel	Lithuania	Cuba	Greece		
Congo	Lao PDR	Jordan	Macedonia	Dominican-Republic	Iceland		
Congo, DR	Macau	Kazakhstan	Moldova	Ecuador	Ireland		
Côte d'Ivoire	Malaysia	Kuwait	Poland	El Salvador	Italy		
Djibouti	Maldives	Kyrgyzstan	Romania	French-Guiana	Japan		
Eq Guinea	Melanesia	Lebanon	Russian-Federation	Guadelupe	Luxembourg		
Eritrea	Micronesia	Libya	Slovakia	Guatemala	Netherlands		
Ethiopia	Mongolia	Malta	Slovenia	Guyana	New Zealand		
Gabon	Myanmar	Morocco	Ukraine	Haiti	Norway		
Gambia	N. Korea	Oman	Yugoslavia	Honduras	Portugal		
Ghana	Nepal	Pakistan		Jamaica	Spain		
Guinea	New - Caledonia	Palestinian - OT		Martinique	Sweden		
Guinea Bissau	Papua-New-Guinea	Qatar		Mexico	Switzerland		
Kenya	Philippines	Saudi Arabia		Netherlands-Antilles	United-Kingdom		
Lesotho	Polynesia Republic - of Korea	Syrian AR		Nicaragua	United States		
Liberia	Republic - of Korea	Tajikistan		Panama			
Madagascar	Samoa	Tunisia		Paraguay			
Malawi	Singapore	Turkey		Peru			
Mali	Solomon-Islands	Turkmenistan		Puerto Rico			
Mauritania	Sri Lanka	United Arab -Emirates		Saint Lucia			
Mauritius	Thailand	Uzbekistan		Suriname			
Mozambique	Vanuatu	Yemen		Trinidad-and Tobago			
Namibia	Viet Nam			Uruguay			
Niger				Venezuela			
Nigeria							
Reunion							
Rwanda							
Senegal							
Sierra Leone							
Somalia							
South Africa							
Sudan							
Swaziland							
Tanzania							
Togo							
Uganda							
Zambia							
Zimbabwe							

⁸³ WHO. J.L.Christopher Murray and Alan D. Lopez. The Global Burden of Disease. A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020. Cambridge, MA, Harvard University Press (for the World Health Organization and The World Bank) 1996, p.398-399.

Users can quickly select a country by clicking on the appropriate region in the upper left corner of the Country Select tab, and then scrolling down to find the desired country. To update the spreadsheet, click on the grey button next to the country name, and the data in the upper grid will update automatically. By clicking this grey button, the selected country data will then automatically be used in the LTC calculations and graphs on successive sections of the spreadsheet:

Figure 3: Example Base Country Data on *Country Selection Tab*

Selected Country : Country X

Country	year	prevalence (thousands) by age in years						population (thousands)	prevalence increase %	proportion total pop %	dependency ratio (%)
		0-4y	5-14y	15-44y	45-59y	60+y	total				
Country X	2000	35.3	55.1	593.6	191.1	194.2	1,069.2	24,965.6	0	4.3	7.5
Country X	2010	34.6	58.1	732.4	273.7	278.3	1,377.2	29,663.1	29	4.6	7.6
Country X	2020	31.3	54.8	846.7	364.2	423.4	1,720.4	33,470.0	61	5.1	8.0
Country X	2030	33.5	52.7	892.8	470.9	619.5	2,069.4	37,149.8	94	5.6	8.7
Country X	2040	32.0	54.7	881.6	579.5	866.1	2,413.9	40,211.1	126	6.0	9.7
Country X	2050	31.1	51.9	864.1	641.1	1,159.1	2,747.2	42,366.5	157	6.5	10.8

Adjusting Supply

The next step is to open the Forecast Input tab, which contains fields that allow users to estimate the national supply of formal and informal LTC, and make additional modifications to the forecast areas of the model. Because of the variations, inconsistency, and unavailability of consistent data on formal and informal LTC supply, the LTC Futures Toolkit allows users to use their own informed judgment on the availability of formal and informal LTC caregiver labour in a given country.

The two upper fields on the left express the national supply of LTC as a percentage of the total labour hours of a selected country. The model uses the Full Time Equivalent (FTE) as the basic unit for measuring the supply of labour available for both formal and informal LTC. The model assumes that each individual in society has 2000 hours of potential labour hours available to them in a given year, so each FTE reflects 2000 hours of work. Of course, for both formal and informal care, some individuals work more than 2000 hours a year, and others work part-time or casually. Thus, 4 individuals who work 2 hours a day as informal caregivers would be one FTE, while another informal caregiver who worked 8 hours a day would also be one FTE.

The supply of potential LTC labour is drawn from two different populations groups:

The potential pool of Formal LTC labour is defined as a percentage of the working population – i.e. the total of those aged 15 to 60.

The potential pool of Informal LTC labour is defined as a percentage of the entire population – i.e. the total of those individuals aged 0 to 60+.

In the case of Country X, users selected two different percentages for formal and informal LTC labour – 8 percent for the percentage of FTE’s of the entire population that are engaged in LTC, and 2 percent for the percentage of FTEs of the working population that is engaged in LTC:

Figure 4: Selector for Percent of Workforce engaged in LTC

Informal Care Labor % of Population	8.000%
Formal Care Labor % of Workforce	2.00%

By altering these percentages, the users in Country X can more accurately determine the formal and informal LTC supply variables that will be used in the rest of the model. The table to the lower right of the supply percentage field automatically updates as new percentages are entered into the green input fields. This table (labelled “LTC Supply Forecast for Country:”) allows users to get a better handle on the actual FTEs represented by a given percentage of informal or formal LTC labour:

Figure 5: LTC Supply Forecast for Country X

Country X Year	Formal Care FTE	Informal Care FTE	Total Care FTE	Disabled per Formal FTE	Disabled per Informal FTE	Disabled per Total FTE
2000	284,207	1,997,246	2,281,453	3.76	0.54	0.47
2010	360,696	2,373,046	2,733,742	3.82	0.58	0.50
2020	429,621	2,677,603	3,107,224	4.00	0.64	0.55
2030	475,948	2,971,987	3,447,935	4.35	0.70	0.60
2040	500,227	3,216,888	3,717,115	4.83	0.75	0.65
2050	509,596	3,389,323	3,898,919	5.39	0.81	0.70

For the given LTC supply percentages for Country X in the year 2000, these figures reflect the following:

- There are 284,207 Full Time Equivalents involved in delivering formal LTC.
- There are 1,997,246 Full Time Equivalents involved in delivering informal LTC.
- There are 2,281,453 Full Time Equivalents involved in delivering all national LTC (formal and informal combined)
- There are 3.76 disabled per Formal FTE - (i.e. the number of Formal care FTEs divided by the forecast total number of disabled in 2000).
- There are .54 disabled per Informal FTE - (i.e. the numbers of Informal care FTEs divided by the forecast total number of disabled in 2000).

- There are .47 disabled per Total FTE - (i.e. combined numbers of Formal and Informal care FTEs divided by the forecast total number of disabled in 2000).

These figures can help users to determine an appropriate percentage rate for the level of formal and informal LTC in their country. National statistics on health care, national case studies, or the judgment of a workgroup, expert panel, or individual can all be used to reflect the unique circumstances of a given country.

Adjusting Forecast Elements

Further down on the Forecast Selection tab are the model’s forecast areas for LTC supply and demand. The baseline for the demographic forecasts are the forecasts contained in the original Harwood and Sayer study (WHO, 2002). For each supply and demand element there is a green input box, which can potentially modify the supply and demand assumptions of the forecasting model. The input boxes are initially set with the value at zero, which reflects that the initial state of the model is equivalent to the baseline impacts of the demographic forecasts of the Harwood and Sayer study.

To run the model with the original assumptions, simply leave each green input box as is, and the baseline assumptions will be reflected in the model. However, if the given circumstances of a country make it reasonable to adjust the baseline assumptions, the impact of each supply or demand factor can be individually adjusted upwards or downwards. The changes in supply or demand factors directly affect the model projections in 2010 and 2020. The years 2020 to 2050 use the same decade growth rates of the Harwood and Sayer study.

Each supply or demand factor can be adjusted up or down along a scale or +5 to – 5. Each increment of the scale represents 1 percent of the total annual amount of “supply” or “demand” for LTC. For supply, the amount represented by each increment is 1 percent of the number of Full Time Equivalent caregivers involved in LTC. For demand, the amount that is represented by each increment is 1 percent of the total number of disabled people. Given the gradual impact of policy and social changes, the impact is only .5% in 2010, and the full 1% increment in 2020. Factors that will increase the supply of, or demand for, LTC care should be increased with positive increments. Factors that will decrease the supply of, or demand for, LTC care should be decreased with negative increments. In the following illustration, the LTC demand factor for Collective Violence has been increased by three increments (+3):

Fig. 6: Example Adjustment of Demand Factor

	<i>Degree to which factor will increase or decrease demand</i>	Base Total 2000 Disability Demand	1 % Demand in 2000	Change Demand 2010	Change Demand 2020
Collective Violence	3	1,069,243	10,692	16,039	32,077
Addictions	0	1,069,243	10,692	0	0
Public Safety	0	1,069,243	10,692	0	0

This adjustment reflects the following:

- The base demand (the total number of disabled in 2000) is 1,069,243.
- 1 percent of the demand (the basic adjustment increment) is 10,692.
- The change in demand in 2010 is 16,039. This number reflects the increment of 3 multiplied against 1 percent demand (10,692) and then multiplied again times .5 to reflect the gradation of the change.
- The change in demand in 2020 is 32,077. This number reflects the increment of 3 multiplied against 1 percent demand (10,692) and then multiplied again times 1 to reflect the full impact of the change.

Because each country has different figures for population, disability, and LTC workers, the model uses the same proportion – 1 percent – for all the countries in the model. While the figures for the 1 percent of supply and demand will vary from country to country, the ratio of the increment to total national quantities remains the same for every country.

Users should remember that adjusting the forecast elements is entirely optional – the model and exercises can be run using the base information (with all forecast adjustment fields set to 0) with results that track the LTC/disability forecasts based on the 1990 Global Burden of Disease forecasts. However, because of the wide variety of factors that can affect disability incidence and care-giving between countries, the adjustability of the base forecasts gives the users the opportunity to customize the model to better reflect unique national circumstances.

In cases where there is national data that could provide a more precise measure of disability incidence and caregiver supply, users should take this data and adjust the supply and demand levels to more closely track the actual data. This can be accomplished by adjusting applicable supply and demand factors so that the final forecast estimates for net supply and net demand (“Net Changes in Supply”, “Net Changes in Demand” on the Forecast Input tab) more closely resemble the given data.

This is most relevant for determining a proper estimate of the supply of formal and informal LTC care that will be used for the model. Figure 4 and Figure 5, illustrated earlier, show the selector for the percentage of the workforce involved in LTC (figure 4) and the resulting numbers of formal and informal caregiver FTE’s implied by that percentage rate (figure 5). If there are national statistics or estimates for formal or informal LTC workers, the relevant percentage rates in figure 4 should be adjusted until the FTE’s in figure 5 are similar.

On figure 5, it is the first three columns “Informal FTE”, “Formal FTE”, and “Total FTE”, and the row for the year 2000, that are going to be compared to the available data.

While some data on the impact of these elements may be available, in most cases, in developed and developing countries the “data” is not there. This calls for informed judgment from the users of this model to consider the factors shaping supply and demand and to make thoughtful adjustments.

In order to reasonably adjust the supply and demand forecast areas, it is important for users to keep in mind what is actually being adjusted in the range between -5 and +5. When determining which forecast area potentially needs modification, the users should focus on making adjustments that are particular to the distinctive conditions in a given country. Potential adjustments that could be considered include:

Supply:

- The extent of economic development. Rapid economic development could increase the supply of formal LTC workers, and decrease informal LTC workers. Economic declines could have the opposite effect, decreasing formal LTC supply and increasing informal LTC supply.
- Population size intervention programs, or a growing middle class, could affect family size and decrease the number of LTC workers. Cultural preferences for large family sizes may boost the supply of LTC caregivers.
- Existing formal or grassroots community based care programs can increase LTC supply, while weakened civic and governance institutions can stifle their development and exacerbate LTC supply problems.
- Substantial migration of health professionals to other countries can decrease the supply of formal caregivers, while a substantial immigration (or other increase in numbers) of health professionals may increase the supply.

Demand:

- Violent ongoing conflict with revolutionary or separatist organizations, or the legacies of past conflicts (such as arms and landmines), can increase disability incidence. Long-standing domestic tranquillity and stability can reduce the injuries sustained by both civilians and the military.
- Widespread addictions to narcotics, tobacco, alcohol, or indigenous substances increase disability, while cultural or legal prohibitions against use or abuse can decrease the incidence of disability.
- National consumption of westernised diets with more fat and less fruits and vegetables can boost the levels of disability from heart disease, and type 2 diabetes. More traditional diets with a proper balance of fruits and vegetables can reduce disability. However, the presence of malnutrition due to growing poverty, can cause the levels of disability to rise again.

These are only a few of the possible reasons to modify a given forecast area. Active consideration of such possibilities and unique national circumstances is one of the intended outcomes of the LTC Futures Toolkit. Even if users decide to leave all the forecast exercises unmodified, the process of thoughtfully considering what factors are affecting the national LTC system can be a helpful way to begin the consideration of the future of LTC.

Determining the extent to which to modify a forecast is also at the participant's discretion. Although the adjustment process is along a simple scale from -5 to +5, each change in increment reflects an actual increase in the number of disabled people, or the number of FTE's providing care. It can be helpful to gauge the number of people represented by each increment by comparing it against the quantity of disabled. The Forecast Input tab allows the users to see exactly what number of people is being affected by changing a forecast area.

On the Forecast Input tab, the "Base Total Care FTE in 2000" represents the baseline total quantity of LTC supply in 2000; while "Base Total 2000 Disability Demand" represents the baseline total quantity of LTC demand in 2000. These figures are the context against which modifications to the forecast areas can take place. When a forecast area is modified, the positive or negative change is shown in the columns for "Change Supply/Demand 2010" and "Change Supply/Demand 2020." Users should consider whether the changes indicated in this column are realistic or feasible, and adjust the selector accordingly.

In the case of Country X, users determined the need to alter the supply factors. In this case, national initiatives in elevating the economic and social status of women are increasing their participation in the workforce and reducing their availability to perform traditional domestic care giving work. While there is not a one-to-one correlation between women entering the workforce and the reduction in the supply of LTC care, there is a definite relationship. There were several factors that lead Country X to change the base forecast for the Availability of Women for Care:

- The female workforce in Country X has grown with approximately 10,000 new women entering the workforce over the last three years. Local planners expected that this trend would continue, estimating that the net quantity of women in the workforce would have a net increase of 80,000 by 2010.
- Urban women in Country X have been gradually delaying the age at which they get married. The average age of marriage has risen from 22 to 24 over the last decade, and will likely increase to at least 26 as the incomes of women rise and engage in more paid work. This shift would lead to approximately 10,000 fewer married women in 2010.
- New manufacturing facilities are being constructed with on-site worker dormitories in tax-free export zones. These manufacturing and living facilities have attracted many rural workers who are willing to move to the manufacturing facilities so they can send the money back to the countryside. The majority of the workers in these facilities are single women. It is estimated that there will be 15,000 additional women living in worker dormitories by 2010.

These three specific trends affecting the Availability of Women for care, when combined, imply that 105,000 more women will be participating in the workforce in 2010. The participants using the toolkit in Country X estimated that approximately 30 percent of these new working women will not be providing LTC. This would imply that 31,500 female FTE's would be removed from the available supply of LTC care-giving. As shown in Figure 7 below, the participants adjusted the Supply Factor by -3 increments, bringing the "Change Supply 2010" to -34,222 which is the closest indicator level for the expected change in the Availability of Women:

Figure 7: Example Adjustment of Supply Factor

Supply for LTC		Supply Factor	Base Total Care FTE in 2000	Care Multiplier in 2000	Change Supply 2010	Change Supply 2020
Family Size	0	2,281,453	22,815	0	0	
Availability of Women for Care	-3	2,281,453	22,815	-34,222	-68,444	
Gender Differentials in Life Expectancy	0	2,281,453	22,815	0	0	

With this supply factor adjusted three increments downwards (-3), it makes the following alterations in the baseline for the forecast:

- The original baseline for the Total Care FTEs in 2000 was originally 2,281,453.
- The supply multiplier for Country X is 22,815 FTEs – a reflection of 1% of the annual supply of LTC care in 2000.
- The change in supply for 2010 is – 34,222 FTEs, the change in supply for 2020 is -68,444. The figure for 2020 reflects the 1% of supply, multiplied by the –3 of that particular supply factor. The figure for 2010 is halved – reflecting .5% of supply.

Altering demand factors occurs in a similar fashion. Country X decides to increase their demand factor for Collective Violence, to reflect the violent fallout of continuing regional and ethnic insurgencies. In this case they increase the demand for LTC by a factor of one:

Figure 8: Example Adjustment of Supply Factor for Country X

	Degree to which factor will increase or decrease demand	Change Demand 2010	Change Demand 2020
Collective Violence	1	5,346	10,692
Addictions	0	0	0
Public Safety	0	0	0

The net result is, that due to this alteration, the baseline forecast will be over 10,000 individuals requiring LTC in 2020.

The model provides three blank topic areas for both the supply and demand forecasts. These topic areas allow participants to further customize the model to their LTC circumstances, and input into the model other supply and demand factors that play a critical role in shaping the LTC system. The “Brainstorming Field of Forces Exercise” allows participants to suggest four different types of new forecast areas:

- The supply area of the report that has the most potential to increase the supply of LTC.

- The supply area of the report that has the most potential to decrease the supply of LTC.
- The demand area of the report that has the most potential to increase demand for LTC.
- The demand area of the report that has the most potential to decrease demand for LTC.

After the participants enter their suggestions into the appropriate capture sheet, the group facilitator can work with the group to finalize the potential candidates for inclusion in the model. When new forecast areas are entered, they can be entered into the model on the Forecast Input tab. Simply select the text on the tab that reads: “Other Supply” or “Other Demand” and type over the text to input the new heading. Finally, adjust the weighting in the green field by adjusting the forecast areas in similar increments from -5 to +5:

Fig. 9: Illustration of Additional Supply Areas

Other Supply 1	0
Other Supply 2	0
Other Supply 3	0

In the case of Country X, their LTC labour supply is being increasingly affected by qualified LTC workers going to other countries as “guest workers” and using their LTC caring skills there. This has a negative effect on the supply of LTC, and by adding this forecast area to the model and weighting it at a -2, it will reduce the number of LTC FTE’s by 22,815 in 2010 and 45,629 in 2020.

Fig. 10: Example of Additional Supply Area

Service Worker Exports	-2	2,281,453	22,815	-22,815	-45,629
Other Supply 2	0	2,281,453	22,815	0	0
Other Supply 3	0	2,281,453	22,815	0	0

How to adjust the Scenario forecasts

The adjusted base forecast of the LTC futures is simulated in four different visions of what the future – and the future of LTC – could look like. These alternative visions of the futures, called Scenarios, give the users of the toolkit the opportunity to move beyond linear forecasts of future, and instead pay closer attention to the potential opportunities and hurdles for LTC in the future. Scenarios can give participants the opportunity to “step into” an alternative future, and more consciously consider how the future may turn out differently than is conventionally expected. By considering alternative futures that could plausibly occur (though they may not have the same probability of occurrence) users of the

LTC Futures Toolkit can develop a richer understanding of the uncertainties and opportunities that that future may bring.

An overview of each scenario is given in Section 4, which gives a general narrative of how the future may unfold over the next 20 years in each given scenario. The scenarios are intended to be a generic description of the possible future for any given country. It provides a broad framework into which participants can develop their own ideas for the specific changes in the LTC systems of the country or region. The scenarios are a starting point to provide a framework for a more systematic consideration of the future of LTC, giving users of the toolkit an opportunity to bring their own expertise and insights to bear on LTC on the future of their country.

The Toolkit model takes the adjusted (or unadjusted) national demographic forecasts for LTC and applies four different scenarios of the future to the forecasts. The Toolkit comes with 4 basic scenarios for the next 20 years, with each of the forecast areas already weighted in the scenarios. The scenarios modify the baseline forecasts through incremental changes in each of the previously specified forecast areas. Changes in the degree of impact are measured in units from -5 to +5, with each increment of the scale representing one percent of the total or demand in a given year. Just as on the Forecast Input tab, the impact is only .5% in 2010, and the full 1% increment in 2020. The Scenario Input tab gives an overview of each forecast area, each scenario, and the modifications to supply and demand under each of the scenario conditions:

Fig. 11: Illustration of the *Scenario Input Tab*

<i>LTC Supply (FTE's) in Country X</i>	Scenario 1 Supply			Scenario 2 Supply		
	Increase or Decrease	Change in FTE 2010	Change in FTE 2020	Increase or Decrease	Change in FTE 2010	Change in FTE 2020
<i>Family Structure</i>						
Family Size	-2	-22,815	-45,629	2	22,815	45,629
Status of Women	-3	-34,222	-68,444	2	22,815	45,629
Gender Differentials	-2	-22,815	-45,629	-5	-57,036	-114,073

The Scenario Input tab gives users an overview of how each of the topic areas is affected in the scenario, and also gives users the opportunity to modify the impact of specific scenario elements as necessary. The model comes with its own set of weightings for each scenario.

Participants can change the weighting of the forecast areas of the scenarios by changing the weight between -5 and +5 on the proper scenario and forecast area on the Scenario Input tab. The “Scenario Impact Adjustment Exercise” (See page 79) on the worksheets gives participants a structured way to propose adjustments to forecast areas, and give an explicit description of the reason why and how each scenario element should change. Participants can enter their proposed changes on to each capture sheet, and the facilitator of the exercise collects and then combines the suggestions to develop the final changes to the scenario weightings.

In the case of Country X, participants made minor adjustments to several of the scenario forecast area elements. Because they had a new forecast area, they used two sets of Scenario Adjustment Worksheets to make their modifications to the scenario weightings. One sheet was used to collect proposed modifications to the existing forecast areas, and the other worksheet was used to collect the weightings for the new forecast areas in each of the four scenarios. Once the results were

collected and combined, the resulting weightings to the scenarios were adjusted on the appropriate line of the Scenario Input sheet. The following example (figure 12) illustrates how Country X replaced the field for “Other Supply 1” with a new field that was more relevant to their country: “Service Worker Exports.” The example shows the new weightings created for the new field as well.

Figure 12: Scenario Adjustment for Country X

<i>LTC Supply (FTE's) in Country X</i>	Scenario 1 Supply			Scenario 2 Supply		
	Increase or Decrease	Change in FTE 2010	Change in FTE 2020	Increase or Decrease	Change in FTE 2010	Change in FTE 2020
Service Worker Exports	-1	-11,407	-22,815	-3	-34,222	-68,444
Other Supply 2	0	0	0	0	0	0
Other Supply 3	0	0	0	0	0	0

Viewing the Output

Once participants have made modifications to the forecasts and the scenarios, the resulting projections created by the model can be investigated. The model has several different tabs that display the comparative changes in the model:

- **Demand Dashboard.** This tab displays the quantitative changes in LTC demand for each successive decade of the LTC model. The Demand Dashboard gives forecasts for the number of disabled across demographic categories. The top of the tab contains the base forecast for 2000, with each successive decade displaying the number for the forecast and each of the four scenarios.
- **Supply Dashboard.** This tab displays the quantitative changes in LTC supply for each successive decade of the LTC model. The Supply Dashboard gives forecasts for population, and the numbers of Informal and Formal LTC workers. The top of the tab contains the base forecast for 2000, with each successive decade displaying the numbers for the forecast and each of the four scenarios.
- **Disability Prevalence.** A graph that displays the percentage increase in the disability prevalence in the population for the base forecast, and all four scenarios.
- **Dependency Ratio.** A graph that displays the dependency ratio for a given country in the base forecast and all four scenarios. The dependency ratio measures the number of disabled compared to the national working population aged 15 to 60.
- **Disabled as Percentage of the Population.** A graph that displays the percentage of the total population that is disabled for the base forecasts and all four scenarios.

- **Informal FTEs.** A Graph of the total number of Informal FTEs (Full Time Equivalent LTC workers, as established by the percentage of Informal LTC FTEs that was determined on the *Forecast Input* tab.
- **Disabled per FTE.** Two separate graphs show the number of disabled per Formal FTE, as well as showing the number of disabled per Informal FTE.
- **Total FTEs.** A graph displaying the total number of FTEs involved in LTC care giving. This figure combined the number of Informal and Formal caregivers to give a total.
- **Instrumental Activities of Daily Living (IADL) 6,7.** This tab is the information storage tab of the country-specific data for the entire model. It is not intended to be used for analysis or display, however it is available to be modified by the addition of updated or more specific country data.

The display tabs of the model give a snapshot of how the demographics of LTC care could change in the future under alternative scenarios. These projections give participants a quantitative and systematic method for the further consideration of changes in the LTC system. While each display tab gives an illustration of what the supply and demand factors of LTC have changed, it does not explain why these changes have occurred. Much of the value from using the LTC futures toolkit comes from the participants applying their expertise to answer this question – given the changed circumstances of the scenario, why and how have these changes come about.

As these questions begin to get answered during the process, it may well be that forecast areas or scenario elements were either overstated or understated in the initial modification process. This is not necessarily an error; it is just an indication that the participants are developing a more nuanced image of how the LTC system is changing, and what the potentials and pitfalls of change could possibly be. By examining the output of the charts and dashboards, the participants can test their assumptions of what the future may be like, stretch their imaginations to create new ideas for how LTC could change, and get a better sense for what the boundaries of change – for both the positive and negative – could be.

Consideration of the future can become an impetus for action in the present. Each country has its unique values, challenges and resources. By extending their own expertise on LTC, participants are able to identify policy options that will be most beneficial in leveraging LTC for the future. The LTC Futures Toolkit provides several exercises and worksheets that can help participants translate their exploration of scenarios of the future into developing better policy options for LTC in the present.

First, however, initiate a dialogue by asking “what does justice require?”, based on “what long-term-care needs exist?” and “what resources are available to provide them?”. Such a dialogue about how best to structure the ethical framework within which equitable, fair, rational, and transparent decisions about long-term care can be made is essential before deciding on policies and ways ahead. Those decisions, then point the way towards systems that are responsible, accessible, efficient, and accountable, and that address the universe of human needs with dignity and respect.

Some of the questions one might need to address relate to how responsibilities among individuals, the family, and the state should be shared:

- **What will families be expected to do, and for whom?**
- **Which members of the family are expected to shoulder these obligations, and why does the task fall to them?**
- **What supports can be provided to make the tasks easier?**
- **What limits should be set on the burdens imposed on family?**
- **What is the responsibility of the community (and who in the community is expected to shoulder these responsibilities?)**
- **What is the responsibility of the State?**

Policy Considerations

The first exercise for participants to use, once they have finished with any necessary reiterations of the forecast and scenario-weighting process is designed to capture the insights, which each participant has to contribute about the different scenarios. The “Scenario Implications Exercise” (See page 81) asks participants to step into each possible future and describe the potential impacts of each Scenario on the LTC system. Participants are asked to describe the following:

- **New Challenges** – Describe the new challenges that the LTC system would have to face if the future resembled this scenario.
- **New Opportunities** – Describe the new opportunities that the LTC system could use to improve care if the future resembled this scenario.
- **Values** - Describe the values that would guide the LTC system if the future resembled this scenario.
- **Policies and Initiatives** – Describe policies or initiatives that would be most appropriate for improving LTC given the circumstances of the Scenario.

After these ideas have been written on capture sheets and collected, the participants can move onto the next exercise. This “Scenario Probability / Preferability Exercise” (See page 83) allows participants to narrow down the range of policy options by rating which scenario is most likely and which is most preferable. The participants distribute points across the scenarios to evaluate their assessment of both the probability that a specific scenario will come to pass, as well as their assessment of what scenario would be a preferable future.

Once the participants’ answers have been collected and tabulated, the resulting group scores for the probability and preferability ratings can be shared with the participants. In addition, the implications identified in the “Scenario Implications Exercise” can be shared with the participants, focusing on the implications identified for the scenario that the participants have found likely and most

preferable. Participants can then discuss the divergence between the challenges, opportunities, and policy options between the Scenarios identified as the probable and the preferable futures. Ultimately, the goal of the discussion is to help identify the best policy options that could help move the LTC system from the probable future towards the preferred future, keeping mindful of the challenges and opportunities that may present themselves along the way.

The final “Policy Directions Exercise” (See page 84) is intended to capture and synthesize the final insights of the participants. This exercise asks the participants the following questions:

- **Best opportunity for improving LTC.** What changes and developments would create conditions that could improve LTC?
- **How to develop that opportunity.** What can be done to use this opportunity to improve LTC?
- **Greatest challenge for LTC.** What is the greatest obstacle facing the delivery of fair quality LTC?
- **How to overcome that challenge.** What strategies or actions can be taken to minimize negative impacts on LTC delivery?
- **Policy option to pursue.** What is the most important policy option today with the greatest potential to improve outcomes in the future?
- **Expected Effect.** If this policy is successfully implemented, what will be the effect on healthy ageing and LTC in the future?

This series of questions collects the final insights of the participants on the challenges, opportunities, and policy directions for improving future LTC. The policy alternatives that are identified could be used in strategic planning for the LTC system and in the formal policymaking process. By using the LTC Futures Toolkit, and engaging in a collaborative process of working through the alternative futures and policy options, the participants can also have a better idea of the range of the alternatives available and a framework for further discussions of LTC.

LTC FUTURES TOOLKIT: SCENARIOS

The four scenarios are:

- Scenario 1: Steady Progress
- Scenario 2: Crisis and Turmoil
- Scenario 3: Civic Renewal
- Scenario 4: Global Transformation

Scenario 1: Steady Progress

The stabilization and gradual improvement of the economic system provides a solid foundation for national health systems to address LTC needs. Demographic changes are a continuing challenge, but the process of Globalisation has evolved to become more inclusive and less exploitative. This provides an environment of international stability and general prosperity that enables national governments to keep pace with the problems posed by LTC. Advanced developing countries have continued to develop export-based economies with a growing middle class that increasingly demands high standards of medical care. Developing countries in crisis receive grants, loans, and aid from the international community to help alleviate critical health situations. This scenario reflects the expectation that average life expectancy will rise and peak to a high of 85 years of age, and that a mild compression of morbidity is achievable.

Shifting From Chronic Disease to LTC

Though there is an ultimate limit to average human life expectancy, it has been possible to mildly compress the onset of morbidity. Healthy lifestyles, as well as new treatments for disabling diseases such as strokes, cancer, and osteoporosis have given greater numbers of the elderly the opportunity to live longer without becoming disabled and dependent. These new forms of treatment are both more effective and more inexpensive to administer, allowing savings from the treatment of the “young elderly” to be allocated towards the increasing medical demands of the “old elderly.” While the provision of LTC is a policy issue that requires vigilant attention, national health systems have been able to adjust to the aging of the population without compromising the quality of care.

The Rising Tide

Increasing economic interdependence between developed and the developing economies have tempered the process of globalisation. These old conceptual categories are breaking down as the “developing” countries are increasingly creating high-value goods and taking a place in the global community as equals. While national income disparities remain, the status of the poorest of the poor has consistently improved, putting even greater numbers of people closer to joining the ranks of the middle class. Economic growth for countries with developing economies has made them a source of demand for the goods and services from more developed economies. Economic exchanges for mutual benefit have come to replace past exploitative economic relationships.

Global + Local = Glocal

The Information Revolution has come with new technologies. Satellite, fibre-optic, and cellular networks for voice and data communications now provide global access and coverage, radically decentralizing access to information infrastructures. Computing and communication devices have become commodity products that have declined in price to become accessible to the all levels of society. These inter-linked networks tie the global community closer than ever before. Yet despite the ease of communication, the Globalisation of culture has given way to its Glocalisation, as each country and culture give their own local interpretation of the international common culture. Local health systems customize the delivery of health services to the specific needs of local populations; yet remain in the larger framework of international health practices.

Robust Democracy

National democratic processes and the rule of law have gradually strengthened and become an intrinsic feature of national political culture. Democracy has evolved past merely holding open elections and is instead more responsive to the wishes of the public, rather than the entrenched interests of the elite. Government operations have become increasingly transparent, and accountability among government officials has become a standard expectation from an increasingly demanding electorate. The corresponding decline in corruption and nepotism provides a solid foundation for further social and economic progress.

Recovering Nature

The rate of environmental degradation has gradually slowed. While there is now a greater commitment to serious harm reduction for the environment, in some cases, change did not come about until resource depletion reached crisis levels forcing the issue into public attention and bringing about policy commitments from national leadership. The rising national standard of living has also contributed to increased environmental commitment, as continuing economic development allows the national economy to devote resources into environmental protection.

Scenario 2: Crisis and Turmoil

Under this scenario, the stress of globalisation exacerbates national tensions, creating new pressures for national health systems. New pressures include economic crises, more authoritarian national leadership, and increased ethnic and regional conflict. These social, political, and economic stresses increase national health burdens, and divert attention from LTC issues. Increasing rates of poverty and disease have compounded the problems associated with the demographic transition, creating higher demand for LTC, without the social resources to address the issue. This scenario reflects a decline in average life expectancy and increases in disability levels due to health breakdowns and social convulsions.

The Crisis of Care

National life expectancies have declined due to the spread of infectious disease, as well as from the health consequences of years of economic and political turmoil. Basic public health programs have been interrupted and de-funded as part of national crises, further exacerbating the problem. As the demands on the health system increase, declining levels of funding lead to both implicit and explicit rationing of health resources. Use of the formal LTC system is dominated by the economic and political elite, with much of the rest of society forced to rely on charitable care or the informal care provided by friends and family.

67

The Great Contraction

The national economy has fallen on hard times, due to the instabilities inherent in the global financial system. Declines in exports and balance of payment problems led to global investors withdrawing funds and investment support from the national economy. This drop in investor confidence led to a dramatic currency devaluation that had the most dire effect on the middle class. As their assets and savings evaporated, and the economy began to contract, the middle class began shrinking in size. National GNP and tax revenues have declined as well, leaving the national government with reduced economic resources to meet public needs and demands.

Fraying Social Ties

Economic dislocations have opened up new possibilities for extremists and radicals to recruit greater numbers of the populace to embrace their values and ideology. Ethnic and cultural separatists have grown in strength, leading to insurgency movements and increasing outbreaks of violence. The contracting economy has broken down the webs of trust in civil society, with each family and community attempting to protect their own from “outsiders.” Social pathologies such as alcoholism, drug abuse, and violent crime are all on the rise, as distressed individuals attempt to alleviate their anxiety through anti-social means.

The Slide Towards Authority

The systemic social and economic crises have shattered public confidence in their political leadership. Corruption and financial manipulation among the most wealthy and politically connected have alienated the public towards the basic processes of their government. Election scandals, declarations of states of emergencies, and other non-democratic and extra-legal actions by elected officials have also contributed to growing public cynicism. Nationalistic and reactionary leaders have taken advantage of this to rise in prominence by calling for wholesale change in the government and a greater emphasis on national renewal.

Race to the Bottom

The general economic decline has made it increasingly expensive to import goods and resources from other countries. Higher energy costs have created an additional drag on the economy, and have increased the use of simpler but more polluting forms of energy production. The extraction of natural resources has accelerated in order to help boost national exports. The pursuit of an economic turnaround at any price is leading to curbs on pollution standards and the repeal of many restrictions on the use of land and water resources.

Scenario 3: Civic Connections

A general global social shift from quantity to quality is reflected by a similar shift in the attitudes of the population towards LTC. The rapid pace of change begins to slow, as the global system begins to consolidate the economic and social gains of the last generation. This process of consolidation forges a greater strength of community ties, and a new emphasis on human connections over technological advancement. In LTC, this emphasis on quality over quantity is reflected in placing increased emphasis on improving the quality of life, instead of on extension of life. The scenario reflects the peaking of average life expectancy at age 85, and a strong compression of morbidity from life long healthy living, innovations in LTC and diminishing requirements for end-of-life care.

From Dependency to Interdependency

With a growing aging population, the values and ethics of LTC are more present in the public's attention and debate. For many people, the division between "dependency" and "independence" is becoming obsolete, since we are all dependent on others for basic necessities such as food, energy, clothing, and shelter. The focus for the elderly shifts to how they wish to spend the last stages of their life. Demand on the LTC system shifts towards enhancing the quality of care and on easing the LTC burdens of families providing informal care. The decline in end-of-life interventions make it increasingly possible to shift LTC resources to enhancing quality of life and in trying to stave off and rehabilitate acute dependence.

The Global Middle Class

While the exports of the national manufacturing and agricultural sectors are robust and healthy, exports of services have become an important new force driving economic progress. The ease of international communications makes it increasingly possible for producers and service workers to trade their goods on the international market, with local agricultural workers accessing and using international commodity prices for trading in local markets. The data infrastructure facilitates access to online instruction that can allow workers to match international standards and practices, while still maintaining pricing power in global markets. This direct and decentralized access to the global economy has done much to swell the ranks of the rich and the middle class. The resulting economic stratification is gradually being curbed through progressive income taxation that helps to spread the economic benefits throughout all segments of society.

Emergence of Cultural Creatives

With growing numbers of the populace able to climb the economic ladder, many have begun to adopt the more holistic and non-materialistic values of the emerging global demographic group originally called "Cultural Creatives." This social group has increasingly rejected conspicuous consumption and material excess in favour of a lifestyle less focused on goods and more focused on a quality of life and significant interactions. While this trend initially emerged among the elite, it becomes increasingly popular among the middle classes. Material success is pursued, but with less enthusiasm and with more concern for equity and sustainability.

The Digital Civil Society

The widespread dissemination of communication technologies has created entirely new mechanisms for citizens to come together in communities of mutual interest. Community organizers use the new capabilities to coordinate with each other, disseminate information, and mobilize across the nation. These fledgling institutions of the new civil society make it increasingly possible to monitor and publicize corporate abuses, administrative corruption, and local injustices. These new organizations are developing increasing capacities to bring public pressure to bear on the government; as well the capacity to use alliances with global NGO's to extend their influence onto the international stage.

Stabilizing Resource Consumption

Growing global prosperity and material demand combined with greater emphasis on preserving and maintaining declining natural resources have increased the costs of many natural resources. However, rising resource costs have been partially alleviated by declining costs of technologies that allow more efficient use of materials, agriculture, manufacturing, transportation, and energy production. With efficient use of limited resources, economic expansion can continue while resource consumption remains flat.

Scenario 4: Global Transformation

The gains from a climate of global cooperation, with reinvigorated international governance institutions and NGO's that are actively intervening to address global poverty and health disparities. The global challenge of increasing numbers of elderly has become a central feature in aid and development efforts. New preventive measures to curb injuries and chronic conditions in the young will allow most of the young elderly and many more of the old elderly to maintain active and productive lives. These measures, such as increased exercise levels and greater education on the correlation between health risks and behaviour, also delay and diminish the disability levels of the old elderly and gradually decrease the aggregate demand for LTC. This scenario reflects a continuation of trends towards average life expectancy increasing past the age of 85, and a strong compression of morbidity from prevention and innovation in LTC.

Healthy Aging

The looming "crisis" of an aging global population focused international attention on the need to pay more attention to the issues of LTC. In many cases, mild lifestyle changes and simple preventative measures were found to delay the onset of dependency for years. Greater attention to early interventions in diet, exercise, and nutrition were the primary means to help delay the onset of disability and dependence. In wealthy urban centres, the years from 65 to 80 became more productive and full of opportunity for involvement in family, community, and the workplace. The delaying of the onset of disability to the very last stage of life is making it feasible to manage the demographic stress of increasing numbers of elders.

The Active Elderly

The continuing activity of the elderly later in life provide growing numbers of highly skilled and qualified workers to help boost national resources. The extension of years when older workers are at the height of their personal development and earning capacity provides additional improvement to national productivity. As a result of this increased degree of economic participation by the elderly, state retirement systems ensure that benefits are equitably distributed among all old people in society.

Expanding Preventive Interventions

The emphasis on health interventions for the elderly has boosted the visibility and public support of preventive health programs, with a growing recognition that increasing access to health and educational services for the poor can be a highly effective means for preventing a variety of health and social problems. Health promotion and prevention programs designed for the elderly are being expanded and modified to help diminish the negative effects of economic disparities for all age groups in society, and move in a direction where health for all can become a reality.

Participatory Democracy

Years of principled and transparent governance have given rise to a political culture that supports a high degree of citizen input and participation. This can range from local and national referenda on important issues, to policy-making processes that are explicitly designed with mechanisms for citizens to give substantive feedback. The widespread participation of citizens in these governance issues has begun to transform public attitudes. The emphasis on

securing basic civil liberties and rights has diminished due to sound government institutions. The new prioritisation is shifting towards the provision of more substantive economic rights and the establishment of a baseline standard of living in society. With such a high degree of public participation in governance, these disparities stand out in stark contrast and are a target for reform.

Smarter Markets

Rising global incomes are gradually making price less important in product differentiation. Global consumers pay more attention to adherence to environmentally and socially responsible means of production. Ubiquitous access to digital communications networks make it possible for shoppers to know the social and environmental impact of products and that affects the purchases of many buyers. These “smarter markets” and discriminating consumer demand are making sustainable and equitable production processes a critical factor in being competitive in the global marketplace.

LTC FUTURES TOOLKIT: EXERCISE WORKSHEETS

List of ExerciseWorksheets

Toolkit Field of Forces Forecast Exercise.....	74
Toolkit Field of Forces Exercise Capture Sheet.....	75
Adding Additional Forces Exercise.....	76
Adding Additional Forces Exercise Capture Sheet.....	77
Scenario Impact Adjustment Exercise.....	78
Scenario Impact Adjustment Capture Sheet.....	79
Scenario Implications Exercise.....	80
Scenario Implications Capture Sheet.....	81
Scenarios Probability/Preferability Exercise.....	82
Policy Directions Exercise.....	83
Policy Directions Capture Sheet.....	84
Next Steps Exercise.....	85
Next Steps Exercise Capture Sheet.....	85

Toolkit Field of Forces Forecast Exercise:

Instructions:

Goal: This exercise is to assess which forecast areas the participants think have the greatest potential to impact supply and demand for LTC over the next 20 years. Participants can nominate the most relevant forecast areas from the workbook, and propose an adjustment of the weight of the area when calculating the forecast model.

- 1) Take several minutes to quickly review again the forecast areas for supply and demand that are contained in the workbook, and consider which forces could have the most impact on supply and demand for LTC over the next 20 years.
- 2) When finished, fill out the 4 entry areas of the worksheet. These four areas represent:
 - The supply area of the report that has the most potential to **increase the supply** of LTC.
 - The supply area of the report that has the most potential to **decrease the supply** of LTC.
 - The demand area of the report that has the most potential to **increase demand** for LTC.
 - The demand area of the report that has the most potential to **decrease demand** for LTC.
- 3) There are three necessary pieces of information to fill in on each of the worksheet entry areas:
 - a) **Supply/Demand Increase/Decrease Area** – for this field enter in the name of the forecast area from the workbook that you feel is most appropriate
 - b) **New Weight (-5 to +5)** – for this field enter in a number ranging from minus -5 to plus +5 to represent the extent to which the impact of this area should be re-weighted in the model. Positive numbers reflect increasing supply or demand, while negative numbers reflect decreasing supply or demand, and enter a zero if you think the weight of the area should remain unchanged.
 - c) **Reason** – for this field, write a few sentences describing your reasons for emphasizing that particular forecast area, including any additional information or insights that are especially relevant to consider.

Toolkit Field of Forces Exercise Capture Sheet

Supply Increase Area:

New Weight (-5 to +5)

Reason:	

Supply Decrease Area:

New Weight (-5 to +5)

Reason:	

Demand Increase Area:

New Weight (-5 to +5)

Reason:	

Demand Decrease Area:

New Weight (-5 to +5)

Reason:	

Adding Additional Forces Exercise:

Instructions:

Goal: This exercise is for participants to contribute their own ideas for forecast areas for supply and demand, which are not included in the model. Participants can create entirely new forecast areas, and propose an adjustment of the weight of the area when calculating the forecast model.

- 1) Take time to discuss forecast areas for supply and demand, which have not been included in the model. What unique circumstances could affect the future supply and demand for LTC in your country?
- 2) When finished, fill out the 4 entry areas of the worksheet. These four areas represent:
 - The supply area of the report that has the most potential to **increase the supply** of LTC.
 - The supply area of the report that has the most potential to **decrease the supply** of LTC.
 - The demand area of the report that has the most potential to **increase demand** for LTC.
 - The demand area of the report that has the most potential to **decrease demand** for LTC.
- 3) There are three necessary pieces of information to fill in on each of the worksheet entry areas:
 - **Supply/Demand Increase/Decrease Area** – for this field enter in a brief name for the forecast area, and briefly describe the area.
 - **New Weight (-5 to +5)** – for this field enter in a number ranging from -5 to +5 to represent the extent to which the impact of this area should be re-weighted in the model. Positive numbers reflect increasing supply or demand, while negative numbers reflect decreasing supply or demand, Special note: in order for the new forecast area to change the baseline of the model, it must have a new weight number – a zero will have no effect.
 - **Reason** – for this field, write a few sentences describing your reasons for emphasizing that particular forecast area, including any additional information or insights that are especially relevant to consider.

Adding Additional Forces Exercise Capture Sheet

Supply Increase Area:

New Weight (-5 to +5)

Reason:	

Supply Decrease Area:

New Weight (-5 to +5)

Reason:	

Demand Increase Area:

New Weight (-5 to +5)

Reason:	

Demand Decrease Area:

New Weight (-5 to +5)

Reason:	

Scenario Impact Adjustment Exercise:

Instructions:

Goal: The purpose of this exercise is to give participants the opportunity to modify the weighting of the impact that each scenario could have on the LTC forecast areas

- 1) Take time to review the specific forecast elements for each scenario. Consider which forecast elements could be better tailored for the specific circumstances of your country adapted for each scenario.
- 2) Determine up to four scenario elements that you feel should be modified to better reflect the potential events and trends that could affect your country and LTC system over the next 20 years.
- 3) The scenario elements you select can all come from a single scenario, multiple scenarios, or from each of the four scenarios.
- 4) There are four necessary pieces of information to fill in on each of the worksheet entry areas:
 - **Scenario Name**– for this field enter in the name (or number) of the scenario in which you wish to change a forecast element.
 - **Area of Adjustment** – enter in the name of the forecast area in which you wish to change a forecast element.
 - **New Weight (-5 to +5)** –enter in a number ranging from minus –5 to plus +5 to represent the extent to which the scenario impact on this area should be re-weighted in the model. Positive numbers reflect increasing supply or demand, while negative numbers reflect decreasing supply or demand, and enter a zero if you think the weight of the area should remain unchanged.
 - **Change** –write a few sentences describing your alternative description of how this specific scenario element would change in the overall scenario. Try to briefly explain why and how the modified scenario element directly affects LTC outcomes in the scenario.

Scenario Impact Adjustment Capture Sheet

Scenario Name:		New Weight (-5 to +5)
Area of Adjustment:		
Change:		

Scenario Name:		New Weight (-5 to +5)
Area of Adjustment:		
Change:		

Scenario Name:		New Weight (-5 to +5)
Area of Adjustment:		
Change:		

Scenario Name:		New Weight (-5 to +5)
Area of Adjustment:		
Change:		

Scenario Implications Exercise:

Instructions:

Goal: The purpose of this exercise is to have participants “step into” a scenario, and identify obstacles, opportunities, and policy initiatives that are relevant to a given scenario.

- 1) Participants should divide into four equal teams, and each team should be made responsible for working with one of the toolkit scenarios.
- 2) In groups, discuss the implications of the scenario. Treat each scenario as if it were the future that is going to unfold, and try to consider how both LTC and the wider social/political/economic system would develop in these changing conditions.
- 3) Discuss this as a group, and then have a member of the group record the consensus answers on the capture sheet.
- 4) There are four necessary pieces of information to fill in on each of the worksheet entry areas:
 - **Scenario Name**– for this field enter in the name (or number) of the scenario with which you are working.
 - **New Challenges** – Describe the new challenges that the LTC system would have to face if the future resembled this scenario.
 - **New Opportunities** –Describe the new opportunities that the LTC system could use to improve care if the future resembled this scenario.
 - **Values** – Describe the values that should guide the LTC system.
 - **Policies and Initiatives** – Describe policies or initiatives that would be most appropriate for improving LTC given the circumstances of the Scenario.
- 5) When the time for discussion and recording is over, have each group report to all participants the results from their discussions.

Scenario Implications Capture Sheet

Scenario Name: _____

1. Assuming that the future resembles this scenario, describe what new obstacles the LTC system would face:

2. What new opportunities could emerge that would help improve the LTC system:

81

3. What values should guide the LTC system in this Scenario:

4. What policies and initiatives could be most effective at improving the LTC system in this Scenario:

Scenarios Probability/Preferability Exercise

Instructions:

Goal: The purpose of this exercise is for participants to assess the relative probability of each scenario occurring, and establish the range of preferences among these alternative scenarios.

T

1. First, rank the probability of the 4 scenarios by estimating how likely each scenario is, with 100 equal to 100 percent likelihood the scenario will happen, 0 equal to 0 percent likelihood for a scenario. Assign the greatest number of points to the scenario you believe is most likely to occur.
2. Second, rank the relative preferability of the 4 scenarios by distributing 100 points across the scenarios. Again, assign the greatest number of points to the scenario you believe would be most preferable.

82

Individual Probability Assessment

_____ Scenario #1: Steady Progress

_____ Scenario #2: Crisis and Turmoil

_____ Scenario #3: Civic Connections

_____ Scenario #4: Global Transformation

100 Points

Individual Preferability Assessment

_____ Scenario #1: Steady Progress

_____ Scenario #2: Crisis and Turmoil

_____ Scenario #3: Civic Connections

_____ Scenario #4: Global Transformation

100 Points

Policy Directions Exercise:

Instructions:

Goal: The purpose of this exercise is to synthesize the ideas and perspectives of the alternative futures into focused ideas for creating optimal LTC in an uncertain future.

- 1) Take some time to assess the different ideas and policies that have been identified through the scenario process.
- 2) The team scenario exercise generated policies that were specific to one scenario. The probability/preferability exercise identified the group assessment of the likelihood and desirability of the different scenarios. Considering the uncertainty of the future, and the need to take action in the present, determine what steps society can take today to improve LTC in the future.
- 3) On the capture sheet, fill in the following fields:
 - (1) **Best opportunities for creating optimal and fair LTC.** What changes and developments would create optimal and fair LTC?
 - (2) **Greatest challenges for LTC.** What are the greatest obstacles to creating optimal and fair LTC?
 - (3) **Policy options to pursue.** What are the most important policy options that the society should implement to achieve best outcomes for LTC in the future (for persons needing LTC; for their family care-givers, for communities and for the State)?
 - (4) **Expected outcomes from policy.** Identify the expected effects of policy interventions for communities, family caregivers and the society-at-large.

Policy Directions Capture Sheet

1. What are the actions, strategies and policies, if introduced today, that would provide for fair and quality LTC in the future?
2. For each action/strategy/policy , identify how it can be developed and what it would require, to implement it?
3. What are the greatest challenges to implementing actions, strategies and policies, which will promise optimal/fair LTC for the future?
4. Given the scenarios, the opportunities, and the challenges for LTC, what are the most important policy options to pursue? What types of outcomes can be expected for communities, family caregivers, and society-at-large.?

Next Steps Exercise:

Instructions:

Goal: The purpose of this exercise is to identify a small number of next steps and who is responsible for them to take the results of this exercise forward.

Next Steps Exercise Capture Sheet

Next Steps and Persons/Organizations Responsible

Identify the most important next steps and those responsible for leading or carrying out the next steps

1.

85

2.

3.

4.

5.

