NICK **N**utritional **I**mprovement for children in urban **C**hile and **K**enya

BRIEFING PAPER 5

NICK

(Nutritional Improvement for children in urban Chile and Kenya) [1]

The actions, pathways and mechanisms in Chile through which broadening community and stakeholder participation can be made most effective in reducing child malnutrition in a sustainable way

Associate Professor Gabriela Charnes
School of Pubic Health
University of Valparaíso

> "Complexity theory offers a much more realistic description of the flow and interplay of events. It brings to the study of human affairs, the sense that everything is indeed related to everything else, however inconvenient that may be for established disciplines, or for organizations based on bureaucratic insularity. It warns us to disregard the claims of ideologists and propagandists that there are unique, permanent solutions to major issues.
>
> It trains us instead to view issues, policies and the consequences of policies as parts of an unceasing interaction. It alerts us to the constant potential for abrupt, discontinuous forms of change. It helps us to understand why only the Law of Unintended Consequences stand intact over the ruins of policies based on single concepts and rigid plans." (Fuerth, 2009 in WHO, 2011, p.9).

[1] The NICK Project partners are the Institute of Education, University of London (Prof. Pat Pridmore (Director), Dr. Tristan McCowan, Prof. Roy Carr-Hill); the International Centre for Reproductive Health (ICRH) Kenya (Dr. Mary Nyamongo, Mr. Daniel Lang'o (ICRH); the University of Valparaíso, Chile, Department of Public Health (Prof. Gabriela Charnes, Dr. Beatriz Salgado.

The advisory group members are Dr. Shahnaz Kassam Sharif, Director of Public Health, Ministry of Public Health and Sanitation; Prof. Marleen Temmerman, ICRH Kenya; Dr. Kirsten Havemann, Counsellor (Health), DANIDA, Mozambique; Prof. Oscar Arteaga, Dean, School of Public Health, University of Chile; Dr Jaime Jamett Rojas Director, Regional Secretariat of health of Valparaíso, Chile.

This paper presents a preliminary discussion on the *actions, pathways and mechanisms in Chile through which broadening community and stakeholder participation* can be made most effective in reducing child malnutrition in a sustainable way. More than a briefing paper it responds to the necessity of sharing reflections with the NICK team and achieving more understanding, precision and transparency in relation to issues that have come up in the first year of the NICK Project in the formation of the Chilean Intersectoral Learning Community (ILC).

It attempts to focus particularly on the challenges that have emerged in relation to the development of sustainable actions and strategies. Childhood obesity is a product of complex and dynamic relations between distinct types of determinants. As it has been thoroughly documented the pathways or mechanisms to reduce child malnutrition cannot be linear and are hard to predict, as they require the participation of many sectors and systems. It is increasingly considered a "wicked problem" (Kickbusch, 2010), this is, an issue that is highly resistant to resolution and a good example of complexity. The successful resolution or at least the management of this complex, wicked policy problem necessarily would require reassessment of some of the traditional ways of working and solving problems. These problems challenge governance structures, skills and organizational capacity (WHO, 2011).

In order to identify pathways to reduce child malnutrition it has been considered necessary in the different workshops carried out by NICK Chile (open space and initial ILC group sessions) to explicitly recognize child obesity as a "wicked" problem. In this process it has become evident how ILC community members –regional government representatives, local health and education organizations, academia and community- begin to develop a broader understanding of obesity. But at the same time, we have observed a marked tendency to act and try to find 'quick fixes' or 'simple sustainable' solutions to child malnutrition.

We understand that the concept "sustainable" implies a long term paradigm shift from a model of development based on inequity and exploitation of resources to one that requires *new forms of responsibility*, solidarity and accountability not only at the national but also at the regional and local level. This requires long-term, constant, persistent and rigorous action and continuous learning programmes that ensure the application of new skills and a high level of systems thinking and approaches which consider the system as a whole, interactions between different elements and possibilities for intervention.

The ILC is developing a comprehensive approach to obesity that is oriented to eventually addressing both dietary habits and physical activity patterns of the population; address both societal and individual level factors; address both immediate and distant causes; have multiple focal points and levels of intervention (at national, regional, community and individual levels) and include both policies and programmes.

The author presents the following concerns and some strategies for addressing these issues:

1. How can the Chilean Intersectoral Learning Community (ILC) develop effective environmental interventions in relation to obesity, and understand how individuals and different groups of individuals, interact with their environments in terms of physical activity and food intake?

2. What do we know to recommend action on the social determinants of health (SDH)? How do we ensure that we continue to act to guide social policies in relation to child obesity?

3. In relation to governance of food and health: What new governance arrangements must be met by the ILC in order to effectively impact obesogenic environments?

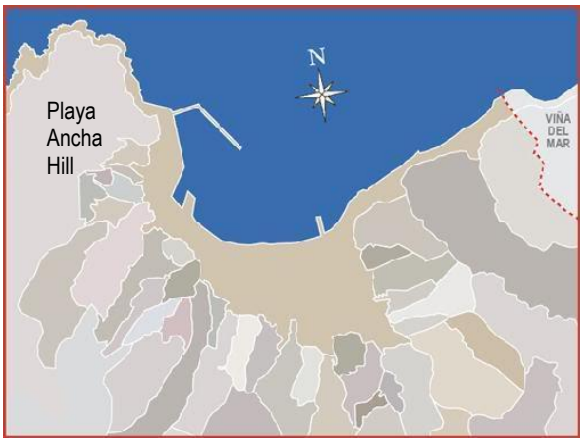
4. How to deal with complexity? Is the NICK team prepared to introduce complex systems thinking as an essential pathway for broadening stakeholder participation, carrying out effective actions and ensuring sustainability?

▪ Introduction

The causes of childhood obesity are complex. Although the simple explanation is that too many calories are ingested (through consumption of food and beverages) and too few calories are expended (through physical activity), the physiological solution (a balance of the amount of calories consumed and used) is more than a matter of individual willpower or personal responsibility.

In this understanding the identification of possible actions*, pathways and mechanisms in Chile* to effectively reduce child malnutrition in a sustainable way is a very complex challenge. This paper attempts to share the rationale of this ongoing process and visualize strategies for public policies based on complexity. At the end of the paper we have included an interesting set of references which support some of the arguments and reflections that this paper brings up.

Living in an environment that lacks healthy food choices and encourages unhealthy ones is a challenge to overcome. The initial baseline data collected in Valparaíso through anthropometric and household surveys in families assisting government sustained nursery schools in the hills of Playa Ancha and Cordillera in Valparaíso describe an environment that offers no place to play and nowhere safe to walk, discouraging physical activity.



Nursery school teachers and regional government authorities from the Health and Education sector agree that even the most motivated adult or parent, or the best-trained child, finds it difficult to act in healthy ways when surrounded by an environment, which does not support or even allow such activity. In Chile, childhood obesity prevention in the

school setting, during the school day, has received a great deal of attention. Nursery school children spend much of their time at school, and government agencies and specific nutrition programmes provides them with opportunities for improving food and beverage consumption and levels of physical activity.

Despite the different programmes that have been created in Chile, childhood obesity is still increasing. The governmental policies developed by the Ministry of Health have been focused on the reduction of fat, salt and sugar intake and increasing the intake of 'healthy food' such as vegetables and fruits and increase the physical activity of children. An interesting case study (Agurto, 2011) on intersectoral/interagency collaboration and public–private partnerships for fruit and vegetable consumption, based on the social determinants of health (SDH) framework, studied the challenges encountered by interagency relationships and across the public–private divide, ranging from the architecture of partnerships to different organisational settings and cultures, as well as interests. The conclusions, based on interviews with key informants and reviews of documents and reports, highlight that partnerships help to overcome the potential conflicts between commercial and social interests but that despite the potentially common goals, more attention needs to be paid to institutional and organizational interests and arrangements, as well as different ways of implementing interventions and policies at all levels. Balanced participation, focused particularly at the local levels, clear leadership and shared vision is necessary to ensure that each organization's interest is considered while ensuring that population health is safeguarded. Stronger involvement of civil society organizations is needed.

Many other crucial aspects of children's environments have been considered in literary reviews and also in the discussions of the Chilean NICK Learning Community. One of these aspects referred to actions that different sectors and local government claim should be taken outside of the school setting and outside of school hours to prevent childhood obesity. Local governments theoretically could do a great deal to bring positive changes to these other environments. These changes could influence how healthy the food and beverages consumed outside of school are (e.g., in after-school programmes) and the extent to which children engage in physical activity, which could depend on the accessibility and maintenance of neighbourhood playgrounds and more physical activity.

By focusing on broader environmental factors as well as on what happens during the school day, local governments are likely to increase their chances of success in preventing childhood obesity. These problems can no longer be resolved by a single sector; yet, it has proven difficult to obtain a joint commitment and a comprehensive approach to address complex, multilateral issues such as inequity between income levels, cultural food intake patterns, health food alternatives and private sector involvement in increasing availability and quality of fruits and vegetables.

> Evidence indicates that solutions to obesity must take into consideration the environments in which children live, learn, and play. The characteristics of these environments, such as the availability of healthy foods and beverages, the safety of streets, and the accessibility of recreation opportunities, can have a strong impact on whether children become obese. Evidence demonstrates that strategies to control the obesity epidemic must work at many levels, and their impact will reach far beyond the health outcomes: they will also have economic, social and political impacts as well as unintended consequences.
>
> (Slama, 2005, p.10).

- **Discussion and rationale of effective actions, pathways, mechanisms and solutions to address the obesity**

The possible identification of effective *actions, pathways, mechanisms and* solutions to address the obesity epidemic has required a sound and deeper understanding of the concepts, different approaches and key forces underlying malnutrition by excess. In this paper we attempt to summarize some of the areas and questions that we have considered important to share and discuss with the NICK team.

1. Rationale for 'upstream' socio-environmental approaches to obesity prevention

How can the Chilean Intersectoral Learning Community (ILC) develop effective environmental interventions in relation to obesity, and understand how individuals and different groups of individuals, interact with their environments in terms of physical activity and food intake?

We have adopted the concept obesogenic environment as the basis for this analysis:

> Obesogenic environments are defined as a set of circumstances that encourages people to eat and drink more calories than they expend and to become obese.
>
> (www.nhsggc.org.uk/ content/default.asp) (Kickbusch, 2011, p.22).

The concept of obesogenic environment describes situations that encourage over-eating and under-exercising; it is not considered an inevitable by-product of modern living, rather, created, recreated, challenged or reinforced by the countless everyday actions (and inactions) of individuals, society, business and government (Garrard, 2009).

In generic terms three environmental factors interact with individual factors (biological and psychological) to shape health outcomes: the physical environment, the social/cultural environment and the policy/regulatory environment.

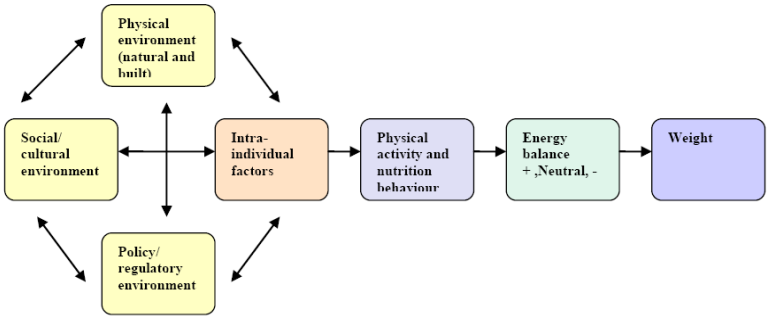


Figure 1: Environmental influences on obesity (adapted from Gebel et al 2005)

The term 'physical environment' includes the built and natural environments. The built environment encompasses land use patterns, transport systems, and design features of the built environment (Gebel et al 2005). The natural environment includes topography, vegetation and landscape. The 'social/cultural' environment refers to social values, preferences and behavioural norms. The 'policy/regulatory environment' refers to governance, policies, legislation, regulations, codes and standards and their enforcement. These three types of environments interact with each other and with individual factors to influence physical activity and eating behaviour.

The other important characteristic of environments for health that we consider of interest is that they manifest as both macro and microenvironments. For example, a government policy, such as permitting junk food advertising during children's television- viewing times, represents a macro level policy environment, while parental restrictions on children's television viewing creates a micro policy environment. Microenvironments are often referred to as the 'settings of daily life', and include communities, schools, workplaces, homes and streets. Macro
issues such as integrated urban planning and transport systems need to be adapted and managed at micro levels.

What difficulties are encountered in defining the obesogenic environment?

The majority of the children in the study function in multiple settings with different people with different criteria (parents, care giver, grandparents), all of which may
influence decisions on food consumption and physical activity. Different types of environmental influences may operate across these multiple domains, encompassing not only physical characteristics but also those associated with social, cultural and policy environments.

One of the necessary challenges of the ILC is that of identifying the core environmental elements that encourage obesogenic behaviours and approaches and actions for establishing active, connected communities. The information collected in the household survey will be an important input. It would have been very appropriate to have this information in this initial phase of problem and solution definition.

2. What do we know to recommend action on the social determinants of health (SDH)? How do we ensure that we continue to act to guide social policies in relation to child obesity?

What is a policy strategy? It means:

- Identifying strategies that have community-wide impact on childhood obesity rates
- Need to be feasible, supported by the community, sustainable, evidence-informed AND also have an impact
- A strategy is high dose if many people in the community change their lifestyle in a significant way as a result of its implementation

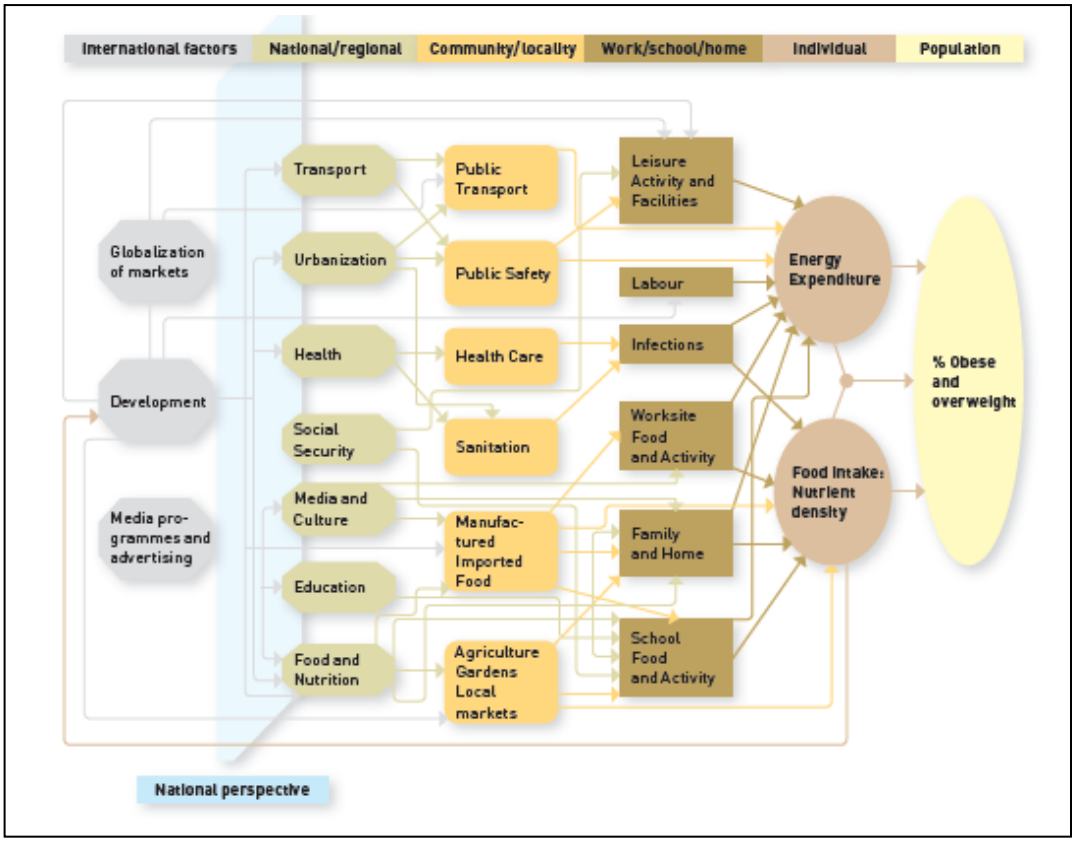
What does it mean to expand Obesity Prevention from Programme to Policy?

- Shift in perception of obesity as an individual behavioural problem to understanding the community dimensions
- Support policy strategies to:
  - Improve access to healthy foods & physical activity
  - Improve school & community environments
  - Make healthy eating & physical activity easier

The *Working Group of the International Obesity Task Force (IOTF, 2*002) sustains that societal-level interventions are the key to tackling the obesity problem in a population. Although they may take a long time to put into place, and even longer to yield results, they can begin to counteract the powerful forces that lead to steady population weight gain.

The following figure, that has been used with the ILC, illustrates the vast range of factors affecting food intake and energy expenditure and the numerous interactions between them that challenge the notion of individual 'free will' regarding food choice and energy expenditure. Many things that individuals do are influenced by 'upstream factors'.

Societal policies and processes with direct and indirect influences
on the prevalence of obesity and undernutrition.
Vertical and horizontal links will vary between different societies and populations



Health in all policies: the food system for obesity
Source: S Kumanyika, et al (2002).

This diagram also highlights the following facts, important to consider in determining actions and pathways:

1. Societal policies and processes operating within and across a range of different settings and sectors influence individual diet and activity patterns, and hence population weight status.
2. Interventions aimed at improving individual lifestyles, when conducted in isolation of societal intervention, tend to have limited success. They are most effective in motivating the socially advantaged who already have sufficient lifestyle options open to them. Over time, this may actually aggravate disparities between the more and less advantaged.
3. No single aspect of the web of policies and processes can be addressed without a potential impact on other areas, many of which have competing commercial interests.

It this context social policy should address upstream factors that affect health through these complex causal pathways over a potentially long time period.

In developing the knowledge and pathways of the ILC we observe a tendency to take decisions basically from intuitive knowledge of actions and mechanisms but that are difficult to translate into effective, efficient interventions. Often it has been found that the obstacle to scaling up promising models is lack of systematic knowledge and political will.

In general terms actions on social determinants of health have been defined as:

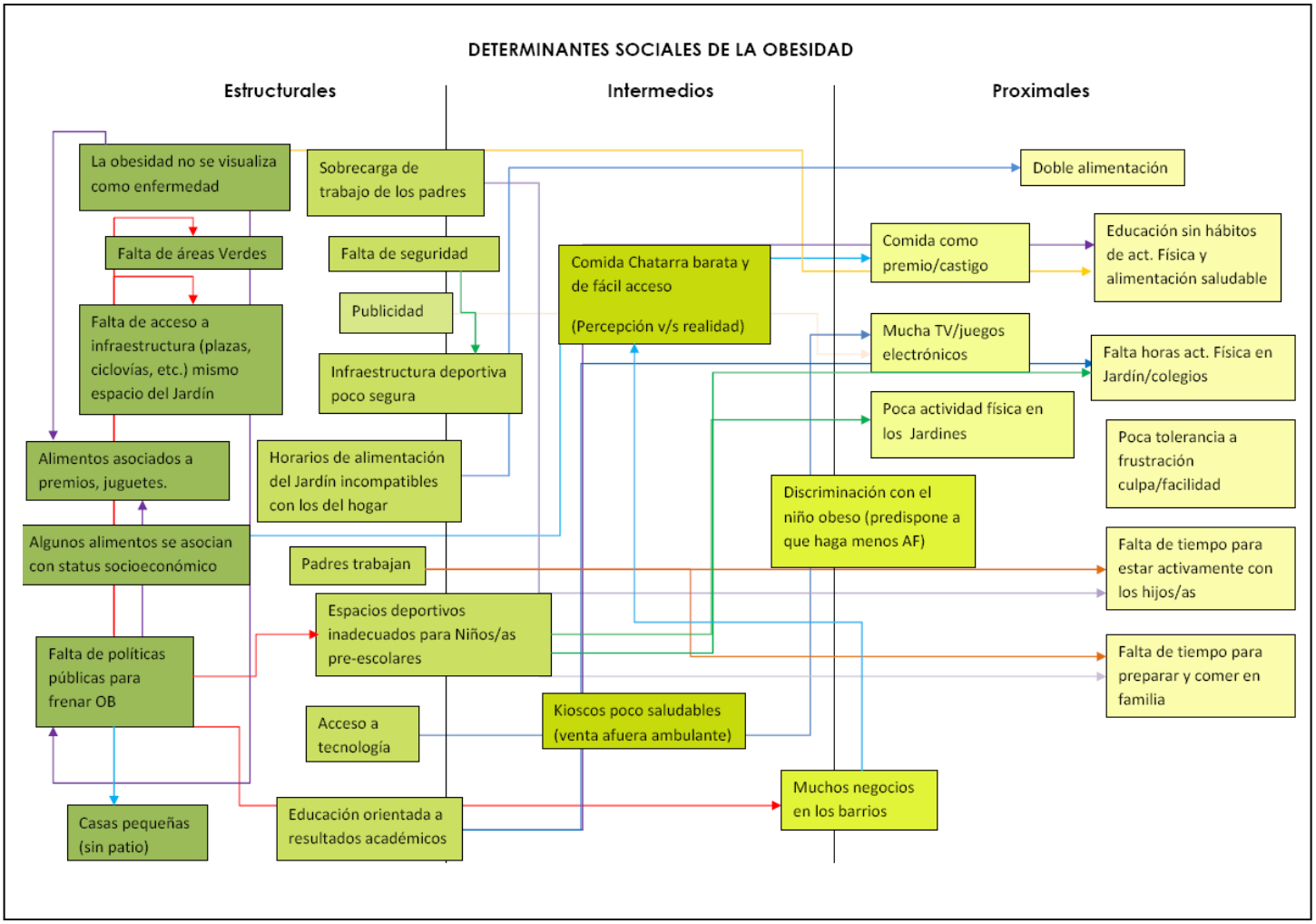
- Upstream, distal: close to the source of the problem but far from where the damage is observed, e.g., a factory dumping contaminants in a river; fast food industry commercializing unhealthy, but offered as an economic alternative to food intake.

- Downstream, proximate: close to where the damage is observed, e.g., people drinking from the river fall ill; the regular intake of high salty, fatty saturated food by children.

(Braveman P, 2011)

Perhaps one the most difficult challenges of the ILC has been that of visualizing the health effects of most social factors and interventions, particularly those that are 'upstream' health determinants.

- **The ILC has analysed and defined the following of SD of obesity. December 2011.**



- **From this analysis the ILC Chile identified the following problems:**

Problems related to insufficient physical activity (within the community, family and institutions)

1. Inadequate space for physical activity
2. Insufficient skills / commitment by/as adults responsible for the development of physical activity
3. Loss of practising daily traditional games

Problems related to excessive food and drink intake

1. Lack of protagonism and empowerment (knowledge) of responsible adults in the choice of healthy and safe food and drink.
2. Family, community and institutional beliefs, values and culture that maintain inadequate food and drink intake habits.
3. Lack of knowledge of necessary caloric intake (food types and quality) and daily nutritional needs and requirements of children of responsible adults.

4. Lack of coordination and communication between the nursery and the family in relation to the nutritional needs of children.

Problems related to the governance of obesogenic environments

1. Disarticulation of the various intra and intersectoral actors in the network of care for children at national, regional and local levels.
2. Lack of knowledge of the roles and the different projects carried out by regional institutions
3. Lack of knowledge of work and functions of local area networks (Joint Local Health Education Committee).
4. Lack of coordination between institutions.
5. Poor coordination between the nurseries and local health centres.

In the third ILC meeting the participants must prioritize these problems and define possible and feasible solutions

Some concerns

Compared with the relatively straightforward health effects of more 'downstream' or proximal factors (e.g., poor nutrition and physical inactivity, which occur closer in time to the health outcomes), the causal links between upstream social factors (e.g. neighbourhood characteristics, and educational attainment) and health involve multiple complex and lengthy pathways, making it much more difficult to study the effectiveness of social interventions under controlled conditions.

Different authors (Blankenship, 2006; Pronyk et al, 2006) recommend working with the upstream nature of most social determinants of health, linking existing to new research along causal pathways and employing diverse methods. They emphasize that standards for evidence to guide social policies should be more diverse than those used for example, for medical interventions, but should be no less rigorous especially when responsibly defining the scope of change that evolves from a rigorous analysis of the SDH that maintain child obesity.

The relationships between upstream social determinants and health are subject to amelioration or exacerbation by a multiplicity of downstream factors and typically involve influences at multiple levels—individual, household or family, neighbourhood or community, and state— that may interact with each other and potentially with biological factors. This potential for interaction along the causal pathway represents a potential source of "noise" in measuring the health impacts of upstream interventions that address social conditions (Braveman P, 2011).

In this context the main concern remains how will NICK Chile really make a difference in relation to other programmes and actions that have been carried out or are underway?

- Is NICK Chile developing a rigorous analysis of possible upstream and downstream actions?
- Is a common evaluation criteria needed in identifying appropriate policy entry points?
- How will NICK Chile ILC position itself in clearly defining the scope of these actions and change?
- How will NICK Chile choose or compromise between two strategic options?

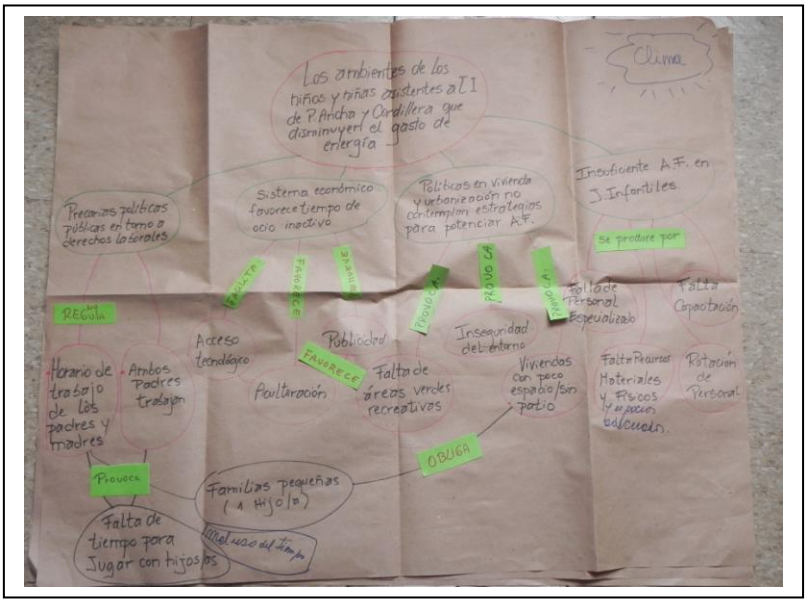
  1. A far-reaching structural critique based on a social justice vision and /or
  2. Promoting a number of tightly focused interventions that may produce short-term results, but risk leaving the deeper causes of avoidable overweight and obesity in excess untouched.

If a more comprehensive, values-oriented approach is taken, NICK may sacrifice short-term efficacy and measurable results. If a more selective, intervention-focused, pragmatic stance is adopted, critics may wonder why an international project was required, rather than a much less costly technical working group. Further reviewing is required of experiences and instruments for analyzing environments and upstream factors determining obesity.

This issue fundamentally seems to concern how the NICK team understands its political role in undertaking the aims to leverage policy action and bring concrete measurable results rapidly and at the same time acknowledge the limitations it has (timing, funding, training team).

Decision makers face greater pressure than ever to ensure that funds are allocated in ways most likely to be effective, and social interventions will be at a disadvantage in policy discussions unless both appropriate criteria and rigorous methods are used to assess evidence of their effects on health. Applying more comprehensive standards for evidence can help to maximize not only the scientific rigor of research on the social determinants of health, but also our understanding of when we do indeed know enough to recommend action (Braveman P, 2011).

In NICK´s overall strategies these issues seem to be important to honestly review. At the heart of all efforts that can be made to catalyse change, what narrative will capture the imaginations, feelings, intellect and will of political decision makers and the broader public and inspire them to action? Are we working on this?



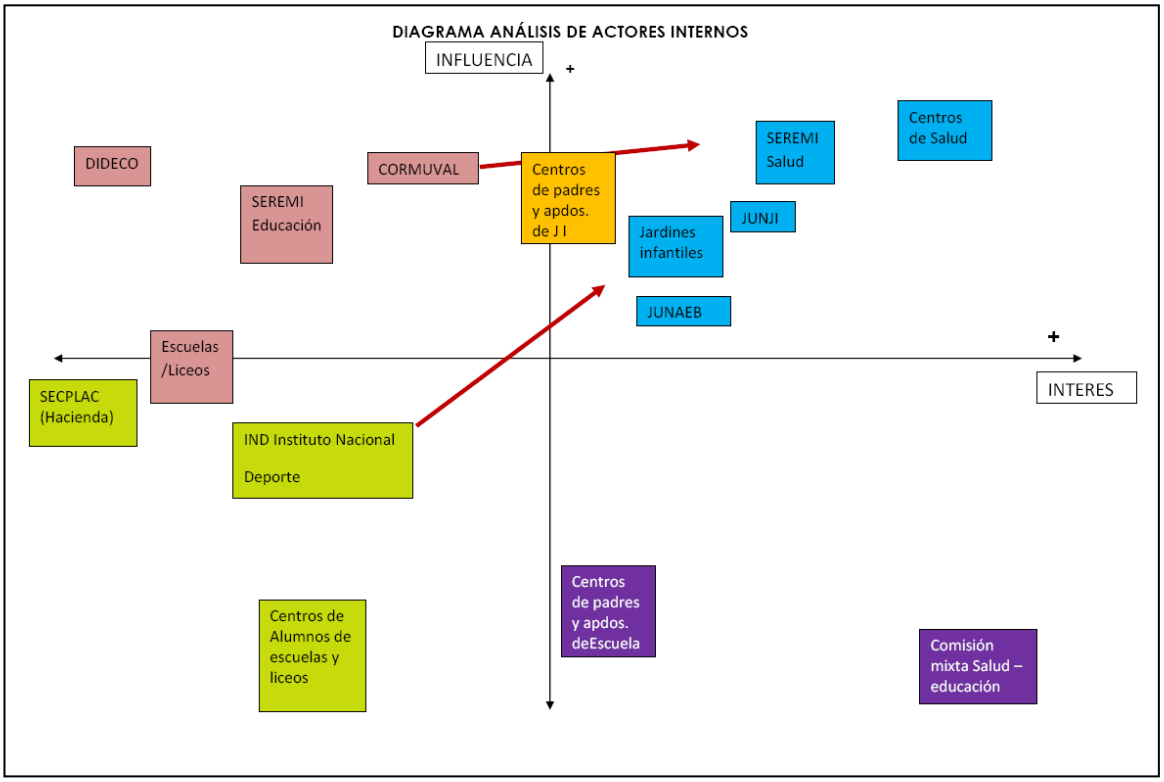
Conceptual map of ILC Chile: Obesogenic environments related to insufficient physical activity. December 2011.

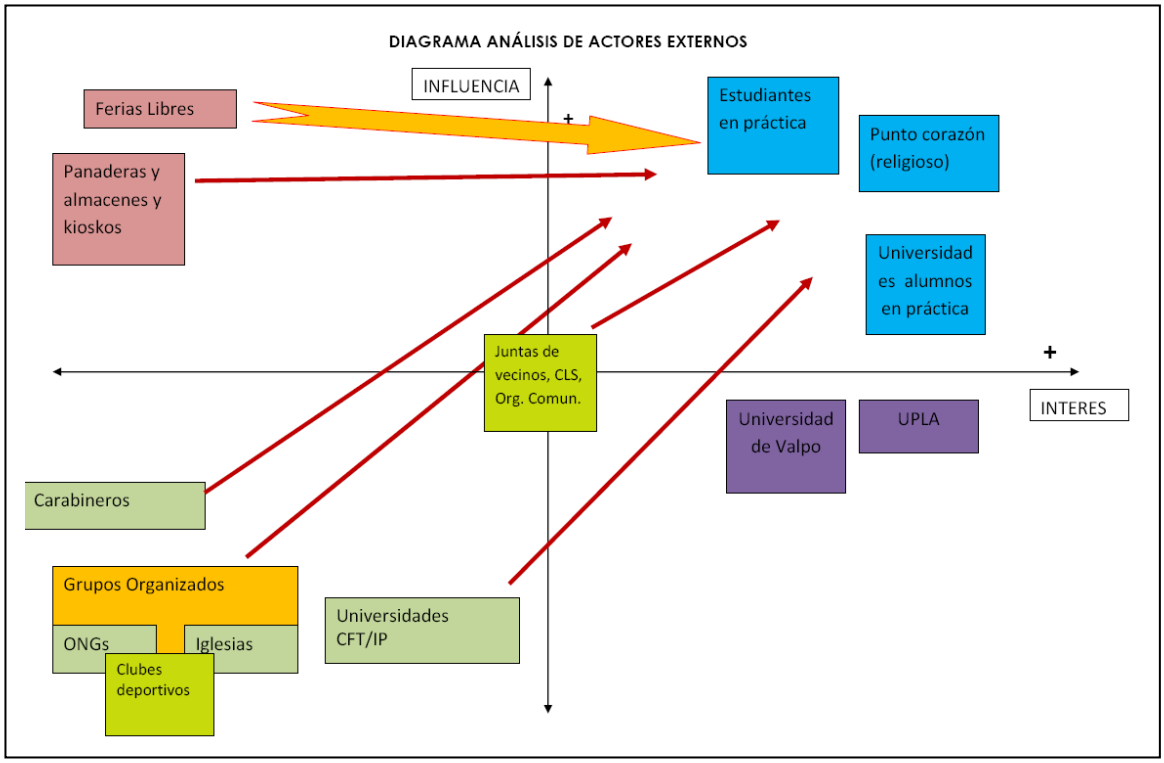
3. Governance of food and health: What new governance arrangements must be met by the ILC in order to effectively impact obesogenic environments?

> Governance for health is defined as the attempts of governments or other actors to steer communities, countries or groups of countries in the pursuit of health as integral to well-being through both a 'whole-of-government' and a 'whole-of-society' approach.
>
> It positions health and well-being as key features of what constitutes a successful society and a vibrant economy in the 21st century and grounds policies and approaches in values such as human rights and equity.
>
> Governance for health promotes joint action of health and non-health sectors, of public and private actors and of citizens for a common interest. It requires a synergistic set of policies, many of which reside in sectors other than health as well as sectors outside of government, which must be supported by structures and mechanisms that enable collaboration. It gives strong legitimacy to health ministers and ministries and to public health agencies, to help them reach out and perform new roles in shaping policies to promote health and well-being.
>
> (WHO, 2011)

Experience to date shows that tackling complex problems and upstream actions require the engagement of many actors. Population health cannot be achieved without collaborative approaches; it requires an active state, but, above all, it requires the involvement, motivation and commitment of citizens and a wide range of social organizations.

The ILC NICK Chile is conformed mainly by local nursery school teachers and authorities, regional and local health and education authorities and professionals from the local health centres. We have had irregular assistance of parents and representatives of food market traders and members of the fishing industry. In the following stakeholder analysis the ILC identified other important stakeholders that should be involved in the action plan, in common platforms and alliances with shared goals.





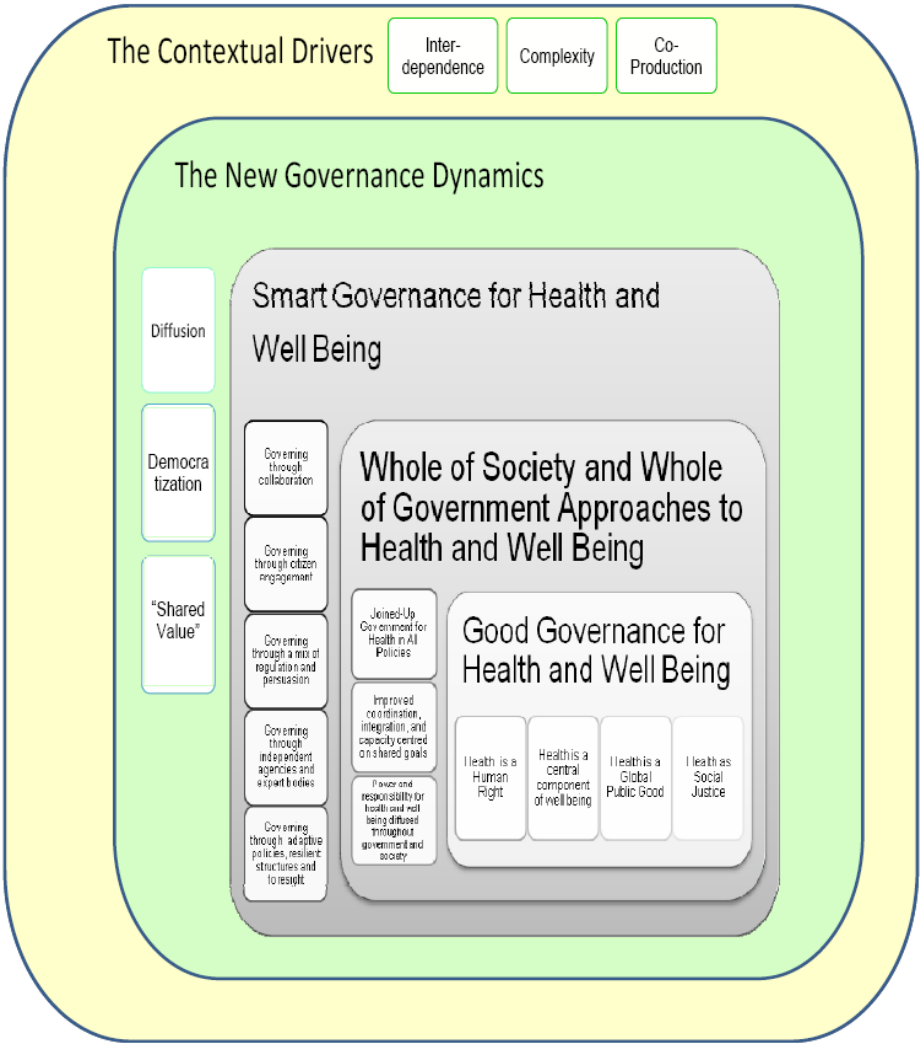
So as to develop a mechanism and pathways to assure cross-sector and cross-border collaborative efforts the ILC have the challenge of investigating how to manage change, especially when considering transformations in food and drink intake in the face of strong private sector interests, which are well organized and coordinated at national, regional and local level.

The study on Governance for Health in the 21st century (WHO Regional Office for Europe, 2011) based on a review of case studies of new approaches to governance for health, makes recommendations on how governments can strengthen governance for health through collaboration. They explore five dimensions for 'smart' governance for health, which should be combined in whole of government and whole of society, approaches which are interesting when considering pathways or mechanisms to assure cross sector interventions.

The study shows the imperative of governing through collaboration, citizen engagement, a mixture of regulation and persuasion, through independent agencies and expert bodies and governing through adaptive policies, resilient structures and foresight.

These are illustrated in the following figure:

Fig. 1. Smart Governance for health and well-being



These five dimensions of smart governance help to define more clearly the skills required by the ILC:

1. **Governing through collaboration:** means giving due consideration to the process and design of collaboration; the virtuous circle of communication, trust, commitment and understanding; the choice of tools and mechanisms; and transparency and accountability.

2. **Governing through citizen engagement: public policy can no longer just be delivered**. The study shows that successful governance for health requires co-production as well as the involvement and cooperation of citizens, consumers and patients. Within the new, complex relations between state and society, participation, transparency and accountability become engines for innovation.

3. **Governing through a mix of regulation and persuasion:** The study shows that traditional hierarchical means of governance are increasingly being complemented by other mechanisms, such as 'soft power' and 'soft law', with expanding influence in an interdependent world. The mechanisms include self-regulation, governance by persuasion, alliances, networks and open methods of coordination as well as the new role of citizens in monitoring democracy.

   Health promotion approaches such as 'making the healthier choice the easier choice' are being reviewed because of the growing interest in such policies. At the same time, hierarchical multilevel regulations that extend from the global to the local level, such as the WHO Framework Convention on Tobacco Control (WHO, 2003) and many European Union regulations, are becoming more common, as are regulations that affect many dimensions of people's lifestyles and behaviour.

4. **Governing through new independent agencies and expert bodies: evidence is critical in a knowledge society**. The study shows that, as in other fields of governance, independent expert bodies, such as federal agencies, commissions, regulators and auditors, are playing increasingly vital roles in providing evidence, watching ethical boundaries, extending accountability and strengthening democratic governance in health, as related to privacy, risk assessment, quality control and health technology and health impact assessments.

5. **Governing through adaptive policies, resilient structures and foresight: 'Wicked problems' have no simple causes or solutions**. The study shows that whole of government and whole of society approaches to health must be adaptive and must mirror the characteristics of complexity; decentralized decision making and self organising social networking should make it possible for stakeholders to respond quickly to unanticipated events in innovative ways.

Challenges for the NICK Team: Necessary mind shifts / Paradigm shifts of ILC required for policy making and positioning the obesity epidemic at regional and local government level and involving the private sector and community actors:

1. Forward and outward looking: a long-term view based on statistical trends and informed predictions of the probable impact of the policy; capacity of communicating policy effectively.

2. Innovative and creative: questioning established methods and encouraging new ideas; open to the comments and suggestions of others.

3. Using evidence: using the best available evidence from a range of sources and involving stakeholders at an early stage.

4. Inclusive: taking account of the impact of the policy on the needs of everyone directly or indirectly affected.

5. Evaluative: including systematic evaluation of early outcomes into policy-making.

6. Reviewing: keeping established policy under review to ensure that it continues to address the problems for which it was designed, taking into account associated effects.

7. Learning lessons: learning rigorously and systematically from experience and documenting what works and what doesn't.

Adapted from "Nine features required of policy-making in the 21st century". Government of Northern Ireland (1999).

4. How to deal with complexity? Is the NICK team prepared to introduce complex systems thinking as an essential pathway for broadening stakeholder participation and carrying out effective actions and ensuring sustainability?

As we have stated before, obesity is a 'wicked problem' – highly resistant to change and thus requires new ways of being addressed. We have been surprised during 2011 with the ongoing and extraordinary changes in society that without doubt will continue to be regular and unexpected features with which we must learn to understand and manage.

In this context, the findings and theories of 'complexity science' are increasingly seen as relevant to public policy in sectors beyond the environment in which it has been used most frequently (OECD, 2009). Complex adaptive systems are characterized by nonlinear, self-organising relations among agents, which give rise to uncertainty and unanticipated consequences or 'emergent properties' or behaviour.

Apparently understanding and impacting the obesity pandemic – a complex wicked problem - requires new skills and a high level of systems thinking and approaches which consider the system as a whole, interactions between different elements and possibilities for intervention.

In complex systems, 'understanding the system as a whole' may include acknowledging the extent of one's ignorance and one's limited grasp of the implications of nonlinear relations within the system.

WHO, 2011.p.65

A systems approaches requires understanding of that the whole is greater than the sum of its parts. Some examples:

Urban planners understand that "the characteristics of a neighbourhood are different from, and not just the sum of, the individual elements of houses, streets, parks and shops. What makes a neighbourhood work, or not, is not the result of its particular parts, but rather, of the complex interactions of the individual elements" (Glouberman et al., 2003).

Another example has been its particular value in child road safety, because it moves away from placing the accent on adapting children's behaviour to cope with traffic, and recognizes that children's need for safe mobility must instead be addressed in the design and management of the whole transport system" (WHO & UNICEF, 2008). It requires understanding the system and the interactions between its elements. Effective interventions require a mixture of policies, from engineering and urban planning, such as reducing and enforcing speed limits and building a separate infrastructure (the establishment of exclusive motorcycle lanes in Malaysia reduced crashes by 27%), to vehicle design and safety equipment, daylight headlamps on vehicles, access to bicycle helmets, legislative action and implementation of standards, as well as better education and skill development for children, parents and the general population.

Systems' thinking is the competency concerned with future-oriented problem solving and decision-making

It implies:

- Understanding the need to see interrelationships rather than cause effect chains
- Being proactive
- Knowing how to manage the processes of change
- Promoting and facilitating organizational learning
- Being creative and flexible in identifying and evaluating alternatives
- Anticipating the consequences of actions and responses
- Optimizing opportunities to improve the health status of the community
- Capacity for future-oriented problem solving and decision making.

The Public Health Competency Handbook: *Optimizing Individual & Organizational Performance for the Public's Health*

Although incipient and insufficient in establishing and consolidating new skills the ILC Chile has emphasized through different team building activities capacities to practise intersectoral approaches to achieve specific goals, the building up of essential collaborative governance skills, the building of trust among the different sectors and

appropriate framing of interdependent policy goals, challenges and solutions. We will be introducing in our third ILC workshop activities to broaden capacity among the participants to imagine multiple possible future scenarios.

In order to sustain change the learning model should be one in which learning is constant. The model being applied in the Chilean ILC is consistent with the organizational learning model (Senge, 1991,1992, 2005; Argyris, 1974,1991, Schon, 1991), which considers five disciplines of the learning organization consistent with complex systems:

1. Systems thinking: a conceptual framework to understand and make patterns clear and anticipate change. The basis of integrated, forward-looking analysis, such as foresight and anticipatory governance, health impact assessments. Being capable of comparing the health consequences of options in policy development.

2. Personal mastery works to continually clarify and deepen personal vision.

3. Mental models works toward scrutinizing assumptions that are deeply embedded and require turning the mirror inward and examining what we see.

4. Building shared vision requires the skills of finding shared scenarios of the future that foster genuine commitment and enrolment.

5. Team learning, which is vital because teams, not individuals, are the fundamental learning unit for the new challenges.

The learning process required to make deep 'shift in mental models'[2]— should be translated into collective learning processes and action and expressed in new thinking patterns, relationships, networks and behaviours. They should be orientated in created conditions for *thinking differently, as opposed to simply doing something differently.* (Iceberg Model and Double loop learning, (Charnes, 2010).

But this curriculum ought to be built so as to guarantee the capacities and skills that the ILC needs for managing complexity. It would be important, among other things, to develop a programme that considers:

1. Long term learning objectives
2. Assessing real time availability of the participants
3. Determining how and when learning will be measured
4. Determining expected outcomes
5. Determining content and availability
6. Matching teaching methods to the audience
7. Developing curriculum
8. Evaluating the learner after the materials have been presented.

[2] The term 'mental models' comes from the field of organizational learning, in which there has been much study of the use of learning as a tool for organizational change. Peter Senge (1983, 2004, 2008), William Isaacs (1999), Chris Argyris (1974,1990, 1993), and Donald Schön (1991).

Developing ‘sustainable’ pathways, actions and mechanisms to reduce child obesity implies a long term paradigm shift from a model of development based on inequity and exploitation of resources to one that requires *new forms of responsibility*, solidarity and accountability not only at the national but also at the regional and local level.

This requires long term, constant, persistent and rigorous action and continuous learning programmes that ensure the application of new skills and a high level of systems thinking and approaches which consider the system as a whole, interactions between different elements and possibilities for intervention and regular platforms for discussion, dialogue and problem solving with other sectors so as to engage and become acquainted with a wide variety of viewpoints in multistakeholder deliberations.

Bibliographic References

Agurto I, Rodriguez L, Zacarías I. (2011) Food and vegetable promotion and the 5-a-day programme in Chile for the prevention of chronic noncommunicable diseases. Across-sector relationships and public–private partnerships. In: Blas E., Somerfield J, Sivasankara Kurup, A., Social determinants approaches to public health: from concept to practice. World Health Organization.

Argyris, C. (1990) Overcoming organizational defenses: facilitating organizational learning, Wellesley, MA, Allyn and Bacon.

Argyris, C. (1993) Knowledge for action: a guide to overcoming barriers to organizational change, San Francisco, Jossey-Bass.

Argyris, C. & Schon, D. A. (1974) Theory in practice: increasing professional effectiveness, San Francisco, Jossey-Bass Publishers.

Blankenship K, Friedman S, Dworkin S., Mantell J. (2006) Structural Interventions: Concepts, Challenges and Opportunities for Research *J Urban Health*. January; 83(1): 59–72.

Braveman P, Egerter S, Steven H. Woolf, Marks J, (2011). When Do We Know Enough to Recommend Action on the Social Determinants of Health? American Journal of Preventive Medicine. Am J Prev Med; 40 (1S1):S58–S66).

Charnes, G. (2011). Pathways to better nutrition Series 2. Optimizing the impact of social determinants of health on exposed populations in urban settings in Chile. Institute of Education, University of London.

Garrard J (2009). Taking action on obesogenic environments: Building a culture of active connected communities. National Preventative Health Taskforce.

Gebel K, King L, Bauman A, Vita P, Gill T, Rigby A, Capon A. (2005). *Creating healthy environments: A review of links between the physical environment, physical activity and obesity.* Sydney: NSW Health Department and NSW Centre for Overweight and Obesity.

Glouberman S. et al. (2003). *A toolbox for improving health in cities: a discussion paper*. Ottawa, Caledon Institute of Social Policy. In: WHO (2011).Governance for health in the 21st century: a study conducted for the WHO Regional Office for Europe.

Kickbusch I. (2010) Triggering Debate – White Paper The Food System, Health Promotion Switzerland. www.promozionesalute.ch.

Kumanyika S, Jeffery RW, Morabia A, Ritenbaugh C and Antipatis VJ. (2002). Public Health Approaches to the Prevention of Obesity (PHAPO) Working Group of the International Obesity Task Force (IOTF), International Journal of Obesity 26, 425–436.

OECD Global Science Forum (2009). Applications of complexity science for public policy: new tools for finding unanticipated consequences and unrealized opportunities. Paris, Organisation for Economic Co-operation and Development.

Pronyk P, Hargreaves J, Kim J, Morison L et al. (2006). Effect of a structural intervention for the prevention of intimate-partner violence and HIV in rural South Africa: a cluster randomised trial. Lancet; 368: 1973–83.

Schön, D. A. (1991) The Reflective Practitioner: How Professionals Think In Action, Aldershot [England], Arena.

Senge, P. M. (1992) La Quinta Disciplina, [S.L.], Sperling & Kupfer.

Senge, P. M. (1994) The Fifth Discipline Fieldbook : Strategies And Tools For Building A Learning Organization, New York, Currency, Doubleday.

Senge, P. M. & Society For Organizational Learning. (2005) Presence: Exploring Profound Change In People, Organizations And Society, London, Nicholas Brealey.

Slama K (2005). From evidence to practice: tobacco control effectiveness. Promotion and Education, 12 (Suppl. 1):28–32. In: WHO (2011).Governance for health in the 21st century: a study conducted for the WHO Regional Office for Europe. http://www.euro.who.int/en/who-we-are/governance

WHO (2011). Governance for health in the 21st century: a study conducted for the WHO Regional Office for Europe. http://www.euro.who.int/en/who-we-are/governance