Poverty Eradication: Access to Land, Access to Food

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Birgitte Feiring Anthropologist, she has worked on indigenous peoples' rights and development for more than 25 years in several agencies worldwide. Key qualifications: Indigenous peoples' human rights as enshrined in ILO Convention No. 169 and the UN Declaration on the Rights of Indigenous Peoples, including implementation strategies at international, national and local levels; application of provisions regarding consultation, participation and consent; land, territories and resources; monitoring and assessment. Rights-based approaches to development; multi- and bilateral policy development and development programming, including design, formulation, appraisal and evaluation of programs. Aid effectiveness and UN coordination, including international policies, strategies, programs and tools for poverty reduction and achievement of the Millennium Development Goals. Communication and information dissemination, capacity-building and training;
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Irene Monasterolo is a development economist with experience in policy monitoring and evaluation; institutional capacity building; governance of sustainability policies; complex system thinking for modelling the resource-climate nexus; green fiscal and monetary policies for financing the green economy; adaptation tools for building agricultural resilience to climate change, focusing on food risk and climate adaptation. She has worked as a scientist in academia, as an economist for consulting companies, as a consultant for the World Bank. Her main focus is on transition economies in Central and Eastern Europe and the Western Balkans. She holds a PhD in Agri-food economics and statistics from the University of Bologna (IT), a post-doc at the Global Sustainability Institute in Cambridge (UK) focused on modelling the impact of resource constraints on global growth and political instability. As a researcher for the Italian National Council of Research, she has studied the role of private-public insurance schemes for building adaptation to climate change. She is actively involved in governmental and academic dissemination and publication, authoring both methodological papers on modelling sustainability using hybrid System Dynamics-Agent Based models, and on best practices and lessons learned to inform governmental policy planning and implementation.

Vittorio Rossi is Professor in Plant pathology at the Faculty of Agricultural, Food and Environmental Sciences at the Università Cattolica del Sacro Cuore in Italy. His main research activity concerns the study of plant pathogens, with particular attention to biological, ecological and epidemiological aspects, as well as crop losses caused by pathogens. Prof. Rossi is Member of the Epidemiology Subject Matter Committee of the International Society for Plant Pathology (ISPP) and of the Plant Health panel of the European Food Safety Authority.

Miguel Gassiot i Matas, Emeritus Professor, is a Chemical Engineer at the Instituto Quimico de Sarriá (IQS) of the Universitat Ramon Llull in Barcelona (Spain) of which he was Rector from 1994 to 2002. He was President of the Technology Transfer Offices of the Council of Spanish Universities (1998-2000) and of the European Federation of Catholic Universities (FUCE), an IFCU Regional Group (2000-2004). A Member of the Royal Academy of Sciences and Arts of Barcelona in 2003, Professor Gassiot is the author of over a hundred publications in specialised magazines on the themes of Analytical Chemistry and the Environment. He has directed several Ph.D. theses on these issues.
He received the Tsweet Medal (discovery of chromatography) of the Academy of Sciences of the Soviet Union (Leningrad, 1978), the Narcis Monturiol Medal of the Catalan Government, the 1993 Prize for Technological Research and the «Jaime Vicens Vives» distinction of the Government of Catalonia for the Quality of his university teaching.

Michael Taylor is the Director of the Secretariat of the International Land Coalition, a global alliance of 120 organizations working together to promote secure and equitable access to and control over land for poor women and men through advocacy, dialogue and capacity building. He has worked for 15 years on community-based natural resource management and land tenure questions in Africa and globally. He has focused in particular on questions of large-scale land acquisitions, common-property tenure and rangeland management systems. He has a PhD in Social Anthropology from University of Edinburgh.

Roberto Zoboli is Professor of Economic Policy at the Catholic University of Milan, Board member of SEEDS – interuniversity research center on 'Sustainability, Environmental Economics and Dynamics Studies', and Associate Researcher of IRCrES-CNR. His main fields of research are environmental and resource economics, economics of innovation, environmental policy analysis. He worked in private research institutions before joining the Italian National Research Council as Research Director (1995-2007). At the Catholic University he lectures on Economic Policies for Resources and the Environment at the Faculty of Political and Social Sciences and he is Director of MIR – Master in International Relations at ASERI – Postgraduate School of Economics and International Relations. He has the scientific responsibility of European and national research activities, including SEEDS participation to the international consortium ETC/WMGE (2014-2018) that works for the EEA – European Environment Agency, and to the Horizon 2020 project Green.EU. He co-authored articles in peer-reviewed international journals, including Journal of Environmental Planning and Management; Environmental & Resource Economics; International Review of Applied Economics; Ecological Economics; The Journal of Environment & Development; Resource, Conservation and Recycling.

Foreword

Addressing poverty and inequality is key to the global common good: each person's inclusion in social, economic and political life is the ultimate criterion by which to assess the quality of the global system in which we live. In the beginning of the 21st century, the 2000-2015 Millennium Development Goals (MDGs) summarised ambitions and efforts of the international community for improving living conditions in the most disadvantaged countries.

In 2015 – year of transition from the MDGs to the post-2015 development agenda – the international dialogue has focussed on re-launching ambitious new goals for the next decades, encompassing both development and environmental issues. The new set of Sustainable Development Goals (SDGs) includes 17 Goals with 169 associated targets; it was thoroughly discussed and is expected to be adopted by the Heads of State and Government of the 193 member States of the United Nations, meeting in New York from 25-27 September 2015. Institutions and organizations of all sorts played a role in defining the new set of goals and targets, but what's most important is the quality of the process that will be activated – whether a truly inclusive one, or some re-edition of technocratic approaches where poor people at best recipients, not agents of their own progress.

Sustainable Development Goal 1. spells: *End poverty in all its forms everywhere*; and Goal 2. *End hunger, achieve food security and improved nutrition and promote sustainable agriculture*. In 2015, despite efforts to pursue MDG 1. *Eradicate Extreme poverty and hunger*, we have to admit that poverty and hunger are still with us. Moreover, they tend to be largely "rural" experiences – our fellow human beings who suffer most from deprivation and malnutrition often live in the countryside. About 800 million people still suffer from hunger, the vast majority of them living in developing countries; their lack access to food often goes with lack of secure access to land, or lack of appropriate and sustainable farming techniques. That is: both problems (hunger and extreme poverty) and sustainable solutions (that is, improved production of better quality food, so that hunger can be defeated and human energy can contribute to local progress) materially are physically close to each other, as they show up in same territory. But problems do not get solved by themselves: poverty eradication needs some trigger to activate human and natural resources.

We would like *EXPO2015 – Feeding the Planet, Energy for Life,* the Universal Exhibition in Milano from May to October this year, to be more than a food and green energy fair. For EXPO2015 to be an opportunity for contributing to poverty and hunger eradication, University research and teaching can play a crucial role. Within a Catholic University, we strongly believe we have a responsibility for implementing initiatives for human integral development and for integral ecology. Research and practical experience converge in showing that feeding

our planet requires much more than a top-down organization for handing food to the hungry – which is obviously essential in emergencies, but should be prudently limited to emergencies only.

"*No family without housing, no farmworker without land, no worker without rights, no one without the dignity that work provides*", said Pope Francis in his address to the participants in the World Meeting of Popular Movements, on Tuesday, 28 October 2014. Feeding all inhabitants of our planet in a sustainable way needs to build on trusting the possibility that poor people can feed themselves with their work, and supporting their effort in full respect for their traditional knowledge and their active agency. Along these lines, we organized for September 1-4, 2014 the Summer School on "Poverty Eradication, Access to Land, Access to Food" from which this e-book derives.

Within ASERI, *Alta Scuola di Economia e Relazioni Internazionali* – Graduate School of Economics and International Relations (http://aseri.unicatt.it/), where the Editors of this e-book work as Director and Lecturer at the Master In International Cooperation and Development (MIC&D, http://aseri.unicatt.it/aseri-master-in-international-cooperation-and-development-overview), we gathered a group of international students, scholars and researchers in view to address the urgent challenge of ending poverty and hunger, combining ethical orientation with realistic policy options and cooperation practices. We tried to conjugate the scientific and ethical dimensions for effective agency, in an intensive interdisciplinary, international programme. This e-book is meant to offer to a larger audience the same opportunity of effective agency, based on recognizing, affirming and defending human dignity, and finding ways for living together as one human family.

In the perspective of the post-2015 development agenda, this e-book aims at providing a broad overview over land access and food security, adopting a multidisciplinary perspective and touching upon issues such as persisting inequalities, increasing urbanization, large-scale cultivable land acquisitions by national and international investors, climate change consequences.
In a world where we observe the paradox of rural hunger, the sustainable growth of agriculture should be a priority for the international development agenda. Ending poverty and hunger requires realizing an equitable access to land, and the adoption of inclusive production models specifically targeted to small farmers and women. Their work is both source and expression of their human dignity; this same work can make access to food more secure both for farmers themselves, and for the communities that live in.

The materials presented and discussed during the 2014 Summer School has been reorganized in four sections. The first section "**Food Poverty and Human Rights**" provides an updated overview of poverty, inequality and food security (Simona Beretta) and framed access to food and access to land in a human rights perspective (Christophe Golay). The second section "**Access to Land**" begins with an exploration of commercial pressures on land (Michael Taylor) and a presentation of the Voluntary Guidelines on the Responsible Governance of Tenure (Anni Arial); it then highlights the situations of the most vulnerable

groups in land tenure, women (Simona Beretta) and indigenous people (Birgitte Feiring) and focusses on the issue of land conflicts (Sara Balestri). Addressing rural poverty and hunger requires identifying the most serious challenges for poor countries, namely addressing food safety to promote food security (Cocconcelli *et al.*), reducing food losses while protecting human health and the environment (Vittorio Rossi), and reducing food insecurity due to exposition to clime change risks by adaptation strategies (Zoboli *et al.*). These topics are dealt with in the third section, "**Food Security and the Environment**". The final section "**Scientific Research and Poverty Eradication**" opens a perspective on how research can serve integral human development and integral ecology: It includes a reflection on the present call for a new humanism, face to rapid advancements in scientific knowledge and technology (Miquel Gassiot i Matas); a call that has important practical application, as illustrated by examples of inter-university cooperation to support local communities' development in soil fertility enhancement and water management in Latin America (CCR-IFCU). The final section also includes some tentative lines for founding integral development on the elemental notion of human dignity (Simona Beretta).

We would like to express our gratitude to the many persons and institutions that made this e-book possible.

First of all, we are grateful to the colleagues mentioned above, who shared with us their expertise during the Summer School and accepted our invitation to provide a written contribution for this e-book; we also thank all the Seminar's participants for their active involvement and lively discussion, and mention in particular Marco Daprà and Chiara Spinelli, who contributed in the preparation of this e-book by providing the transcription of two lectures. Marco was also involved in collecting the interviews with lecturers for the video you can access (http://www.cattolicanews.it/corsi-e-master-nutrire-il-pianeta-come).

We are very grateful to the Graduate Schools of the Università Cattolica, and especially to ASERI Graduate School of Economics and International Relations, for providing us with the human and financial support that allowed realizing the Summer School and also this e-book. As institutions live because of actual people's care and involvement, let us personally thank Roberto Brambilla and Davide Fantinati for encouragement and for making financial support available to us. Nadia Moscato and Cristina Rago provided the most welcoming environment for the Summer School, solving all sort of problems well before they could materialize.

We also thank the Laboratory "UCSC ExpoLAB" (http://progetti.unicatt.it/progetti-ateneo-expolab-home?rdeLocaleAttr=en), for providing the perfect interdisciplinary environment for the 2014 Summer School and this e-book; we would like to especially thank Pier Sandro Cocconcelli, ExpoLAB Director, and also Antonella Cassano and Claudia Schirru. ExpoLAB has been active within Università Cattolica del Sacro Cuore since 2011, coordinating different competences inside the University, realizing research and training with a genuinely multi and inter disciplinary perspective on the EXPO 2015 themes, and spreading good practices. Current initiatives of Università Cattolica within

EXPO2015 are constantly updated at the "UCSC for EXPO" website (http://www.unicatt.it/ucscforexpo/expo-home).

We gratefully acknowledge support from the International Federation of Catholic Universities (http://fiuc.org), and we would like to particularly thank Monsignor Guy-Réal Thivierge and Professor Miquel Gassiot, coordinator of the Center for Coordination of Research (CCR-IFCU), whose mission consists in promoting interuniversity and multidisciplinary research within the framework of international cooperation. IFCU promoted the 2014 Summer School across the wide network of catholic universities across the world, and Professor Gassiot directly participated both in the Summer School, sharing with us his deep scientific knowledge and his experience in promoting of interuniversity scientific collaboration.

Last but not least, let us thank our families – and especially Guglielmo, who recently arrived to brighten the world with the energy of new life; and our colleagues and friends Mario Maggioni and Domenico Rossignoli of CSCC, for sharing with us the enthusiasm for engaging the whole breadth of reason in university work. After all, it is unreasonable to settle for less than that.

Sara Balestri, Simona Beretta
Milano, July 2015

PART ONE
Food Poverty and Human Rights

Poverty, inequality and food security

Simona Beretta[1]

Understanding how poverty, inequality and food security are interconnected is necessary for actually providing adequate access to "sufficient food, which is adequate both in quantity and quality which conforms with the beliefs, culture, traditions, dietary habits and preferences of individuals in accordance with national and international laws and obligations" – according to the definition given at the World Food Summit in 1996.
Access to good quality, appropriate nutrition is a more comprehensive objective than providing a predefined level of calories intake, or even accessing specific sets of micronutrients. Human nutrition is a complex social activity, shaped by culture and tradition; as anthropologist have shown, traditional local food habits developed over the centuries in such a way to combine all necessary nutrients from local production; while the simple adoption of a new staple food coming from other regions of the world – irrespective of native traditional knowledge – may lead to severe forms of malnutrition (as it was the case for some northern Italy valleys, where corn was adopted as staple food and pellagra followed)[2].

1. THE GEOGRAPHY OF HUNGER AND POVERTY IN 2015: ASSESSING THE MDG PROCESS

Food security includes four important dimensions, to be simultaneously satisfied. One, the physical availability of adequate supply of food, either through local production or through imports. Obviously, the two sources of supply are not equivalent, as the passionate debate on "food sovereignty" shows[3]; at the same time, nobody denies the importance the international community be ready to intervene in order to provide food supply as a form of humanitarian aid in case of natural catastrophes or conflict situations.
The simple availability of food – either local or global – is unfortunately no guarantee the each family can actually access sufficient food. Families need sufficient purchasing power for actual access to food; that is, families' food security depends upon both income levels and food prices – and the latter

[1] **Simona Beretta**, ASERI and CSCC, is professor of International Economics, Università Cattolica del Sacro Cuore, Milano.

[2] *"Pay attention, too, to the combinations of foods in traditional cultures: In Latin America, corn is traditionally cooked with lime and eaten with beans; what would otherwise be a nutritionally deficient staple becomes the basis of a healthy, balanced diet (the beans supply amino acids lacking in corn, and the lime makes niacin available). Cultures that took corn from Latin America without the beans or the lime wound up with serious nutritional deficiencies such as pellagra. Traditional diets are more than the sum of their food parts"*, in Pollan M., (2008) *In defense of food. An eater's manifesto*, Penguin Books, New York, 2008, p. 23.

[3] Patel R. (Guest Editor) Food sovereignty, *The Journal of Peasant Studies*, 2009, 36:3, 663-706 http://dx.doi.org/10.1080/03066150903143079.

are known to have significantly increased in the last years, while exhibiting a formidable volatility[4]. Besides physical and economic access, a third dimension needs to be mentioned, namely food use – that is, the availability of nutrients' quantity and quality in order to live a healthy and active life. Individual food use depends on one's health, but also on social and cultural dimensions especially related to family habits – how food is prepared, and how it is distributed among family members. As a fourth dimension of food security, we need all of the above conditions to be realized in a stable way. Food insecurity may exhibit seasonal patterns, depending on crop availability, on economic conditions such as unemployment of a household's member or unusually high food prices; on weather instability or political upheaval. Stability of access is crucial, as even temporary malnutrition may lead to health problems, less productive work, reduced labour incomes and impoverishment, all conducive to vicious circles of increasing poverty.

In general, physical access to food in sufficient quantities matters, but quality and access matter even more. Access to food is a complex, multidimensional phenomenon, requires a multiplicity of essential conditions. If water and sanitation are not accessible, food may be accessible but food use precluded by health problems – in Sub Saharan Africa, malnutrition is clearly connected to the fact that 30% of the population lives in areas with no access to drinkable water and sanitation. As a further example, if girls do not access education or basic health training in the communities where they live, it is very unlikely for them to appropriately deal with nutrition issues during their pregnancy and in the early childhood of their babies.

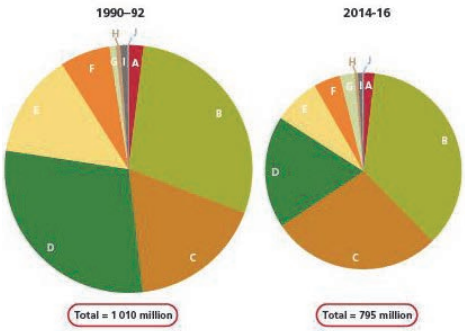
In sum, access to food and food security depends on the quality of family, community, and local relations and institutions; and also on the quality of national and global policies. Promoting food security requires an array of appropriate policies in a number of different sectors such as agriculture production, health provision, water management, hygiene and in education particularly for women and girls; moreover, one should recall that promoting access also touches upon the (formal and informal) institutions that shape the life of families and communities – which are deeply embedded in local cultures and traditions.

In year 2000, the international community solemnly pledged to MDG 1, "Eradicate extreme poverty and hunger" by 2015, including MDG 1C, "Halve, between 1990 and 2015, the proportion of people who suffer from hunger". Two specific targets were indicated, namely the prevalence of underweight children under five years of age, and the proportion of population below minimum level of dietary energy consumption (undernourishment); in the past 15 years, much has been accomplished – but not enough, and not in all regions. Over the MDGs implementation years, the international community was able to systematically access better data on food security in different countries and regions, thus exploring in more detail where, how and why food insecurity remains a problem, both as an unbearable burden on human existence, and as a formidable obstacle to poverty eradication in subsequent decades.

[4] *Price Volatility in Food and Agricultural Markets: Policy Responses*. Policy Report including contributions by FAO, IFAD, IMF, OECD, UNCTAD, WFP, the World Bank, the WTO, IFPRI and the UN HLTF, June 2011, http://www.oecd.org/tad/agricultural-trade/48152638.pdf.

The prevalence of undernourishment has moderately declined (it has not halved, as required by MDG 1.); absolute numbers remain unacceptably high, above 820 million people in the world have been estimated chronically suffering from hunger in the period 2012-2014, of which 805 million in developing regions; provisional estimations for 2014-2016 are slightly below those levels, but the number of 795 million undernourished people in the world is still unacceptably high, with wide differences across regions[5].

The changing distribution of hunger in the world: numbers and shares of undernourished people by region, 1990–92 and 2014–16



	Number (millions)		Regional share (%)	
	1990–92	2014–16	1990–92	2014–16
A Developed regions	20	15	2.0	1.8
B Southern Asia	291	281	28.8	35.4
C Sub-Saharan Africa	176	220	17.4	27.7
D Eastern Asia	295	145	29.2	18.3
E South-Eastern Asia	138	61	13.6	7.6
F Latin America and the Caribbean	66	34	6.5	4.3
G Western Asia	8	19	0.8	2.4
H Northern Africa	6	4	0.6	0.5
I Caucasus and Central Asia	10	6	0.9	0.7
J Oceania	1	1	0.1	0.2
Total	1 011	795	100	100

Note: The areas of the pie charts are proportional to the total number of undernourished in each period. Data for 2014–16 refer to provisional estimates. All figures are rounded.
Source: FAO.

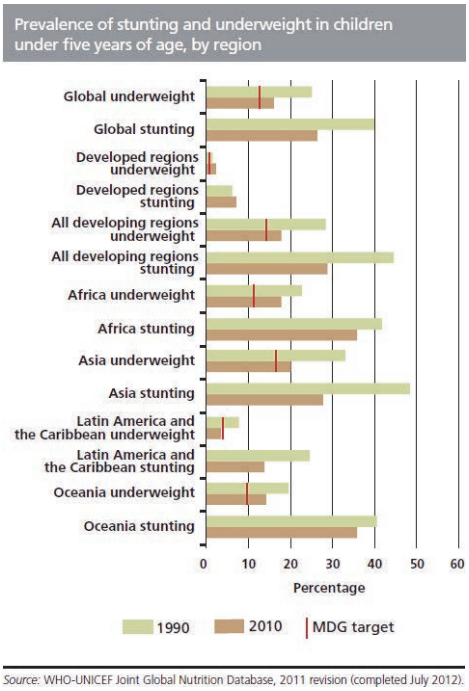
MDG target 1c, which requires halving, between 1990 and 2015, the proportion of people who suffer from hunger, is measured by two different indicators: the prevalence of undernourishment, monitored by FAO, and the prevalence of underweight children under five years of age, monitored by the United Nations Children's Fund (UNICEF) and the World Health Organization (WHO).
The situation of children is particularly delicate, as malnutrition in early childhood is known to produce long term negative consequences on personal, social and economic development. Underweight can be caused by a range of different factors – not only calorie or protein deficiency, but also poor hygiene, disease or limited access to clean water, resulting in stunting, wasting or underweight. Over the MDGs implementation years, there has been a shift in tackling child under-nutrition from efforts to reduce underweight prevalence (inadequate weight for age) to prevention of stunting (that is, low height-for-age)[6]. The recent *Rome Declaration on Nutrition*[7] indicates that chronic malnutrition as measured

[5] FAO 2015, The State of Food Insecurity in the World, http://www.fao.org/3/a4ef2d16-70a7-460a-a9ac-2a65a533269a/i4646e.pdf.

[6] Stunting, or low height for age, is caused by long-term insufficient nutrient intake and frequent infections. Stunting generally occurs before age two, and effects are largely irreversible. These include delayed motor development, impaired cognitive function and poor school performance. See UNICEF, *Improving Child Nutrition – The Achievable Imperative for Global Progress*, April 2013, http://www.unicef.org/publications/files/Nutrition_Report_final_lo_res_8_April.pdf.

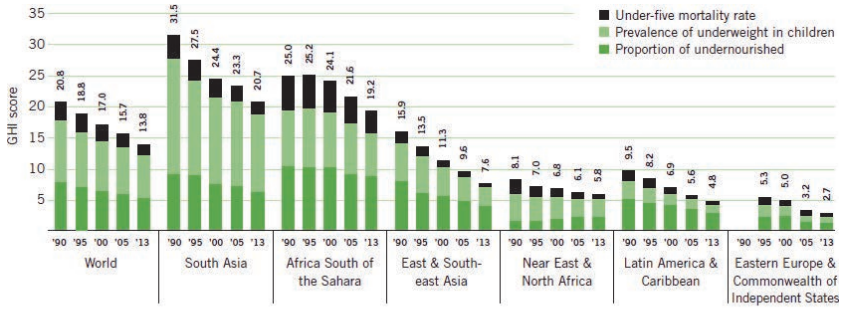
[7] FAO, *Rome Declaration on Nutrition*, Second International Conference on Nutrition, Rome, 19-21 November 2014, Conference Outcome Document, http://www.fao.org/3/a-ml542e.pdf.

by stunting has declined; yet, it still affected 161 million children under five years of age in 2013. Under-nutrition was the main underlying cause of death in children under five, causing 45% of all child deaths in the world in 2013. Acute malnutrition (wasting) affected 51 million children under five years of age.
In all regions of the world, the incidence of under-five stunted children is indeed higher than the incidence of inadequate dietary energy supply; that is, providing food security for this important group of population requires enhancing the nutritional quality of food children have access to.



Source: WHO-UNICEF Joint Global Nutrition Database, 2011 revision (completed July 2012).

The International Food Policy Research Institute has also been providing a multidimensional measure of hunger by region and by country called Global Hunger Index (GHI). To reflect the multifaceted nature of hunger, the GHI combines three equally weighted indicators into one index: Undernourishment, as measured by the percentage of population with insufficient caloric intake over total population; Child underweight, that is the proportion of children below five who have low weight for their age (reflecting wasting or stunted growth, or both); and Child mortality, that is the mortality rate of children below five, reflecting the combination of inadequate food intake and unhealthy environment.



Note: For the 1990 GHI, data on the proportion of undernourished are for 1990–1992; data on child underweight are for the year closest to 1990 in the period 1988–1992 for which data are available; and data on child mortality are for 1990. For the 1995 GHI, data on the proportion of undernourished are for 1994–1996; data on child underweight are for the year closest to 1995 in the period 1993–1997 for which data are available; and data on child mortality are for 1995. For the 2000 GHI, data on the proportion of undernourished are for 1999–2001; data on child underweight are for the year closest to 2000 in the period 1998–2002 for which data are available; and data on child mortality are for 2000. For the 2005 GHI, data on the proportion of undernourished are for 2004–2006; data on child underweight are for the year closest to 2005 in the period 2003–2007 for which data are available; and data on child mortality are for 2005. For the 2013 GHI, data on the proportion of undernourished are for 2010–2012, data on child underweight are for the latest year in the period 2008–2012 for which data are available, and data on child mortality are for 2011.

Contribution of components to 1990, 1995, 2000, 2005, and 2013 global hunger index scores, by region

Physical assess to food is crucial, but quality of nutrition and access are also very important.

On the medical side, WHO estimates that over two billion people worldwide suffer from micronutrient deficiencies, in particular vitamin A, iodine, iron and zinc. This is a serious issue, since micronutrient deficiencies may lead to blindness and anaemia – which actually impede personal wellbeing and impair one's participation to active economic and social life. Vitamin A deficiency (VAD) is the leading cause of preventable blindness in children, and increases the risk of disease and death from severe infections. In pregnant women VAD causes night blindness and may increase the risk of maternal mortality. Vitamin A deficiency is a public health problem especially in Africa and South-East Asia, hitting hardest young children and pregnant women in low-income countries[8]. This problem should not be reduced to the need of adopting isolated technical solutions, as the multidimensional definition of food security clearly implies; but it does require attention.

At the same time, overweight and obesity have also been rapidly increasing in all regions, with over 500 million adults affected by obesity in 2010 and 42 million children under five years of age affected by overweight in 2013; close to 31 million of these children are living in developing countries.

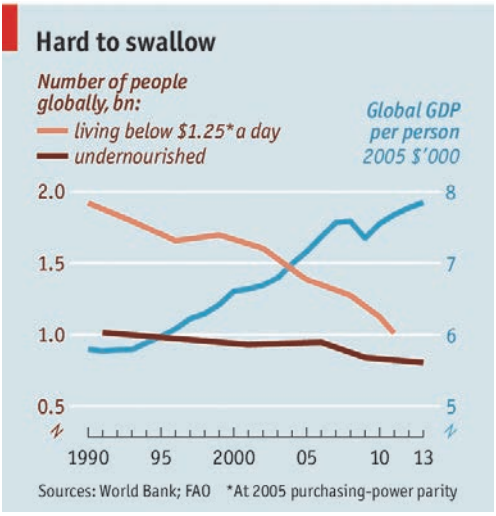
2. TOWARDS THE POST-2015 AGENDA FOR POVERTY ERADICATION AND FOOD SECURITY

In 2015, at the completion of the MDGs process and in drafting the post-2015 SDGs as to poverty eradication and food security, the international community is called to a special effort in understanding how poverty, inequality and food security are interconnected.

One simple, yet striking, fact is the following: despite significant progress in reducing economic poverty in the MDGs years, undernourishment and other forms of malnutrition remain a huge challenge for the post-2015 agenda. The

[8] http://www.who.int/nutrition/topics/vad/en.

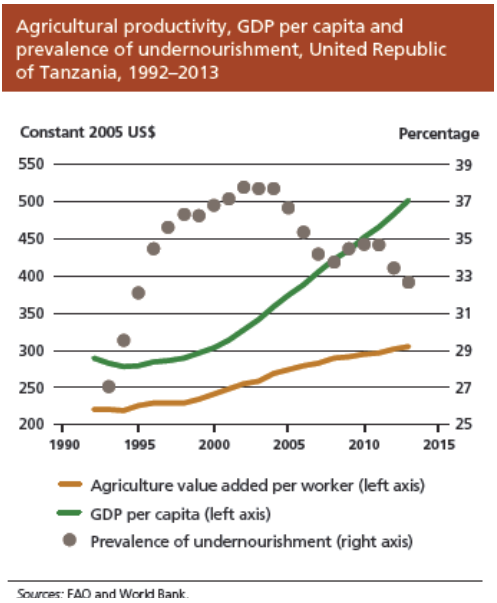
MDGs process actually succeeded in reducing extreme poverty, as expressed by MDG 1A ("Halve, between 1990 and 2015, the proportion of people whose income is less than $1 a day"). Over the 1990-2015 period, global real GDP increased by 3,6% on average per year, and the percentage of population living on less than $1.25 a day indeed halved. As the Table below shows, global GDP per capita has increased by around one third in the period since 1990; the world has witnessed a significant reduction in the headcount of people in extreme poverty (more or less halved), but a much less pronounced decline in the number of undernourished people.



Source: The Economist, *Malnutrition, nutrients and obesity. Feast and famine*, November 29th 2014

Why halving hunger has proved harder to achieve than halving poverty, as measured by income levels? Inequality, marginalization and vulnerability are clearly part of the answer. Extreme weather, rising and volatile food prices, conflict situations, political unrest, and all sorts' crises or shocks are especially harmful to the poor and most vulnerable, exposing them to food insecurity and exacerbating their risk of being trapped in material and non-material deprivation. A second important consideration focusses on the importance of local institutions and national policies for achieving food security, with particular reference to social protection, investment in local food production, and international trade policies. As an example, the latest FAO report on global food insecurity brings the case of Tanzania, where the prevalence of undernourishment increased on average over the period 1990-2015, with a 33% prevalence of undernourishment at the end of the period, despite a simultaneous significant increase in GDP per capita between 1990 AND 2015. This clearly problematic national experience, according to FAO, is due to the adoption of a mix of domestic and trade

policies that boosted growth via external trade liberalization, at the same time penalizing local food production due to lack of local agricultural investments[9].



FAO 2015, *The State of Food Insecurity in the World*, Box 2, p. 30

A third consideration concerns the complex, articulated map of malnutrition that characterizes each country, including high income economies where increasing inequality makes food security an issue for the vulnerable, marginalized people – especially households where unemployed or working poor prove unable to provide stable access to adequate nutrition to household's members. Different, overlapping forms of malnutrition represent the "new normal" in all our societies – with different local experiences facing different challenges. This is the basic highlight of the latest Global Nutrition Report by IFPRI – International Food Policy Research Institute[10]. As the poor are most likely to suffer undernourishment, under-nutrition and obesity, poor countries and regions disproportionately are home to stunted children, anemic mothers, overweight adults.

Complexity and interdependence among poverty, inequality and food insecurity are clearly recognized – at least in principle – in the current international discussion headed towards defining the post-2015 Agenda. Among the 17 Sustainable Development Goals under discussion, the first and the second relate to poverty and hunger. Goal 1. is titled "End poverty in all its forms everywhere", and Goal 2. is titled "End hunger, achieve food security and

[9] FAO 2015, *The State of Food Insecurity in the World*, http://www.fao.org/3/a4ef2d16-70a7-460a-a9ac-2a65a533269a/i4646e.pdf, Box 2, p. 30.

[10] http://www.ifpri.org/publication/global-nutrition-report-2014.

improved nutrition, and promote sustainable agriculture". The draft of the outcome document for the UN Summit to adopt the Post-2015 Development Agenda, as to June 2015, lists 169 targets associated to the 17 goals[11].

The specific targets for Goal 1. include eradicating extreme poverty (people living on less than $1.25 a day) for all people everywhere, by 2030; and reducing at least by half the proportion of men, women and children living in poverty according to national definitions. The list of targets goes on with implementing nationally appropriate social protection systems, achieving substantial coverage of the poor and the vulnerable; ensuring that all men and women, particularly the poor and the vulnerable, have equal rights to economic resources and access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services. Moreover, targets refer to building the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks. The above targets require ensuring significant mobilization of resources, in order to provide adequate and predictable means for developing countries to implement programs and policies, and creating sound policy frameworks based on pro-poor and gender-sensitive development strategies, also In order to support accelerated investments in poverty eradication actions

Goal 2. "End hunger, achieve food security and improved nutrition, and promote sustainable agriculture" is also detailed into targets: by 2030, ending hunger and ensure access by all people to safe, nutritious and sufficient food all year round; and ending all forms of malnutrition (stunting and wasting in children under five), and addressing the nutritional needs of adolescent girls, pregnant and lactating women, and older persons. Other targets include doubling by 2030 the agricultural productivity and the incomes of small-scale food producers (women, indigenous peoples, family farmers, pastoralists and fishers) through secure and equal access to land, productive resources and inputs, knowledge, financial services, markets, opportunities for value addition, and non-farm employment. Moreover, they include ensuring sustainable food production systems and implementing resilient agricultural practices that increase productivity and production, help maintain ecosystems, and strengthen capacity for climate adaptation.

By 2020, targets include maintaining genetic diversity of seeds, plants, farmed and domesticated animals and related wild species (seed and plant banks at national, regional and international levels), and ensuring access to equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge. They include increasing investment in rural infrastructure, agricultural research and extension services, technology development, plant and livestock gene banks, to enhance agricultural productive capacity in developing countries, in particular in least developed countries; all of them may be reached also thanks to enhanced international cooperation. Other targets are considered: correcting and preventing trade restrictions and

[11] https://sustainabledevelopment.un.org/content/documents/7261Post-2015%20Summit%20-%202%20June%202015.pdf.

distortions in world agricultural markets (including agricultural export subsidies and equivalent export measures), and adopting measures to ensure the proper functioning of food commodity markets and their derivatives, facilitating timely access to market information to help limiting extreme food price volatility.
The list of targets included under Goal 1. and Goal 2., as anyone can appreciate, is very exhaustive and reflects the learning from the MDGs process. They encompass a wide array of issues, central to the pursuit of food security. Reaching consensus over the full range of desirable targets is very important, but unfortunately is a necessary, but not sufficient condition for ending poverty and hunger. The actual achieving of such an important goal rests on responsible action on the side of all persons, communities and institutions – according to what is in their power to accomplish, including challenging the "established structures of power which today govern societies"[12] and that directly or indirectly resist change in order to preserve their command over different kind of resources.

3. ENDING POVERTY AND HUNGER: TOWARDS AN ACTION-ORIENTED, INTERDISCIPLINARY POLICY PERSPECTIVE

For complexity and interdependence to become operational notions, and not only buzzwords, their implications must be captured "in action", since all situations are different. Hence, close proximity to people suffering from food insecurity is essential for understanding the root causes of malnutrition. No "eradication" effort can succeed in ending poverty and hunger by simply treating symptoms one at a time, while failing to address underlying causes.
Poverty, inequality, lack of access, hunger and malnutrition are interconnected according to time-specific and location-specific patterns. Appropriate policy actions require fine-grain mapping of the interdependent dynamics among all of the above, understanding the structure of the poverty-inequality-food security nexus within specific local experiences. On the contrary, top-down, one-size-fits-all policies are bound to reach at best mixed results, however good intentions they pursue.
This is not to say that general policy orientation overviews are useless. They can help, provided they are humble enough to accept their intrinsic limitations and to open to interdisciplinary perspectives.
The contribution in this book are meant to open an interdisciplinary dialogue, and to support the basic view that policy action for eradicating poverty and malnutrition requires the poor to be protagonist of their own development. The closer to experiencing the problem is the agent than is legitimated to take decisions and implement them, the more effective is the policy action. This is what implementing the subsidiarity is about: policy actions need to be decided and enacted as close to the problem as possible, with the maximum of local ownership and valorisation of community-based initiatives.
Revisiting the abundant empirical evidence that the MDGs process strongly contributed to develop, we can identify some key issue that seem especially

[12] Pope Francis, *Laudato sii*, 2015, n. 49.

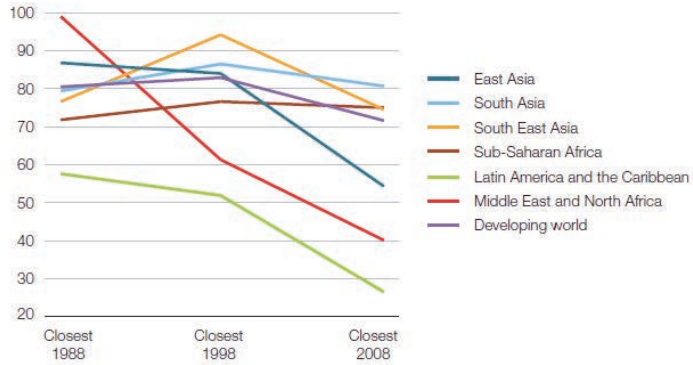
relevant for poverty and hunger eradication, and that can apply to a broad set of situations across the world. In what follows, I would like to highlight that some important dimensions of the poverty-inequality-malnutrition nexus combine with each other, clearly requiring interdisciplinary dialogue and multidimensional policy action.

Rural hunger, growing cities

Empirical evidence gathered during the MDGs years leads to an important and quite paradoxical conclusion: *poverty and hunger are largely "rural" experiences*, that call for decidedly promoting and supporting smallholders.
In the developing world as a group, the share of extreme poverty in rural areas remain above 70%, with the highest incidence in South and South East Asia. According to the Global Monitoring Report 2013[13], only 11,6% of the urban population is poor, as compared to the 22.7% of the global population. That is, 29.4% of the rural population is poor at the global level. Obviously, people are located along a spectrum from rural to urban, with many types of settlements from small to large towns; the experience shows that the smaller the town, the higher the poverty rate, with lower access to MDG-related services.

Rural share of total poverty

(Rural people as percentage of those living on less than US$1.25/day)



Source: IFAD, Rural Poverty Report 2011, p. 47 (http://www.ifad.org/rpr2011/report/e/rpr2011.pdf)

As the Figure above shows, the absolute numbers of the poor living in the countryside has been declining over the MDGs period, in parallel with a burgeoning urban population. The reduction of the rural poor, though, goes with a burgeoning poor urban population, living in peripheral areas characterized by

[13] World Bank and International Monetary Fund, Rural-Urban Dynamics and the Millennium Development Goals, Global monitoring report 2013, Washington DC 2013, http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1327948020811/8401693-1355753354515/8980448-1366123749799/GMR_2013_Full_Report.pdf.

degradation and deprivation, very likely trying to escape escaping ever worse rural life conditions.
According the latest Food and Agriculture Organization statistics from 2015, as reported by the World Food Program (https://www.wfp.org/hunger/who-are), most of the world's hungry (98 percent of them) live in developing countries. Three-quarters of all hungry people live in rural areas, mainly in the villages of Asia and Africa where agriculture is the only economic activity, and its performance is very poor. For example, in Sub Saharan African countries around 80% of workers are employed in agriculture, but they only produce around 40% of national GDP. As little or no alternative source of income or employment is available in rural areas, the local dwellers are very vulnerable to crises. Many of them migrate into cities in order to search for employment, thus expanding urban populations in low-income countries.
Out of the 795 million hungry people estimated by FAO in 2015, around half live in smallholder farming communities, which typically can access only marginal lands exposed to drought or flood. Another 20 percent belong to landless families who depend on farming for income, and about 10 percent live in natural resources dependent communities that make their living out of herding, fishing or forestry. The remaining 20 percent live in the peripheries of low-income countries' big cities. The numbers of poor and hungry city dwellers are rising rapidly along with the world's total urban population.

Smallholder farming: turning a problem into a possible solution

Reducing rural poverty and hunger and achieving urban food securities are serious, connected issues that need appropriate policies across different developing regions. Both issues highlight the importance of investing in smallholder farming communities. From these communities come the most part of the new urban poor; they decide to leave the rural areas for lack of income and opportunities, and/or for even harsher situations such as being displaced, dispossessed or denied access to land when land titles are lacking. Indigenous rural people are especially likely to experiences these negative shocks. At the same time, investing in rural communities' self-organization and in services and infrastructures allowing these communities to access urban markets for their products, can play a major role in providing both accessible food to poor urban dwellers, and stable income to smallholders. Thus, promoting better quality smallholders' farming is key to both poverty eradication and food security in rural and urban areas.
Other chapters of this e-book provide further elements to go deeper into the multidimensional challenge of supporting smallholder and family farming, in view of enhancing food security and eradicating poverty. The institutional dimension is very important: land titles and land tenure conditions are crucial for smallholders' investment. One should also mention that women are the world's primary food producers, but they are much more likely to be affected by hunger and poverty than men, because of either/or cultural traditions and social structures.
Culturally and technically appropriate techniques are key for reducing food losses while protecting human health and environment; water and soil management should also be especially developed for smallholders, that can

learn and share – from farmer to farmer – appropriate technologies that can enhance sustainable production.

Food safety as a building block of food security

Food security is strictly connected to food safety and to sound farming practices. Food safety in rural and urban areas depends on how agricultural products are transported, stored, and processed in order to be consumed, either directly by producers or by people purchasing food in local markets. Consumers who live in high income countries are accustomed to procedures, controls and labelling practices aimed at providing a good level of food safety; occasional episodes of food poisoning tend to get massive media coverage.
On the contrary, much remains to be done for food safety in most other regions. The 2014 *Rome Declaration on Nutrition* remarks that food insecurity is often aggravated by poor sanitation and hygiene, foodborne infections and parasitic infestations, and ingestion of harmful levels of contaminants due to unsafe food from production to consumption.
Investing in small scale farmers' ability to deal with food safety issues – even in simple matters as appropriate storage – can provide a powerful push towards reducing food losses and enhancing food security.

Right to food, dignity of work

Another facet of the poverty-inequality-hunger nexus relates to how food security and access to stable working opportunities are connected. The right to food is correctly part of the basic human right to live a dignified life, and such dignity includes to right to actively contribute to one's own development, which obviously includes access to basic goods and services but also the ability to cultivate and express and seeing recognized one's creativity in the community to which one belongs. Sharing wisdom, creativity, knowledge is simply human, and that kind of sharing was essential in shaping the practice of human work and of social organization along the centuries.
Even today, food security can be truly sustainable when individuals, families and communities are able to rely on their productive work to access adequate and stable nutrition. Nutrition itself is more than simple calories intake, as the official definition of food security makes it clear. The cultural and symbolic dimension of food in building one's personal and community identity cannot be underplayed. Thus, receiving anonymous food through anonymous provision mechanisms (or, in other words, using technocratic solutions to provide the basic human right to food) may feed the body and temporary improve human life in emergency situations, but it does not justice to the human need for self-esteem and for social recognition.
A "well rounded" notion of poverty eradication and food security makes it clear that they are not objective to be pursued by using technocratic approaches, aimed at efficiently combining "means" with "ends", overlooking the human need for quality relations. This is evident in how poor persons describe their experience of poverty: "Poverty is humiliation, the sense of being dependent on them, and of being forced to accept rudeness, insults, and indifference when

we seek help" (Latvia 1998); "Being poor is being always tired" (Kenya 1996); "Poverty is pain; it feels like a disease. It attacks a person not only materially but also morally. It eats away one's dignity and drives one into total despair" (Moldova 1997); "Poverty is lack of freedom, enslaved by crushing daily burden, by depression and fear of what the future will bring" (Georgia 1997)[14]. Other, more recent, documents also collect voices from poor farmers; again, working with dignity is essential: "We want to continue [farming]. Without it we cannot run our household... And it's one's own work and so one works hard... When we do labour outside... they stand on our heads to make sure we work... They also give salary at their own discretion... Sometimes they give it after a month. Sometimes 10 to 15 days after the month-end. The household is not run this way..." (interview to Muhammad Naveed, age 22, IFAD 2011, p. 45)
For ending hunger, it is essential to prioritize the goal of access to decent work and to steady employment for everyone. Work is in facts a source of human dignity, and at the same time an expression of human dignity.

Addressing inequality for ending poverty and hunger

Global inequality is very high, within countries and across countries. International institutions, both Geneva-based and Washington-based, are devoting increasing attention to it. The post-2015 SDGs also include Goal 10. "Reduce inequality within and among countries", an issue which was not present at all in the MDGs.
By 2030, Goal 10. targets include as an objective to progressively achieve and sustain income growth of the bottom 40% of the population at a rate higher than the national average; empower and promote the social, economic and political inclusion of all; ensure equal opportunity and reduce inequalities of outcome, eliminating discriminatory laws, policies and practices and promoting appropriate ones; adopt fiscal, wage, and social protection policies to progressively achieve greater equality.
While the above targets imply significant domestic reforms, other dimensions of inequality require broader policy targets, such as improving regulation and monitoring of global financial markets and institutions, enhancing representation and voice of developing countries in global international economic and financial decision making processes and institutions, implementing the principle of special and differential treatment, in accordance with WTO agreements for developing countries; and encouraging ODA and financial flows and foreign direct investment to states where the need is greatest, in accordance with national development plans and programs. Notably, the targets for reducing inequality also include facilitating orderly, safe, regular and responsible migration and mobility of people, and reducing to less than 3% the transaction costs of migrant remittances – being remittances one of the most important channel for financial transfers from higher income to lower income countries.

[14] Both are quotes from D. Narayan, with R. Patel, K. Schafft, A. Rademacher & S. Koch-Schulte. *Voices of the Poor: Can Anyone Hear Us?*, Poverty Group, PREM World Bank, December 1999; http://siteresources.worldbank.org/INTPOVERTY/Resources/335642-1124115102975/1555199-1124115187705/vol1.pdf. Published for the World Bank, Oxford University Press, New York, N.Y., 2000.

One should obviously welcome the introduction of a goal aiming at reducing inequality among the SGDs; at the same time, dealing with inequality (in income, and in opportunities) can be very difficult. One of the difficulties of dealing with inequality at the global level comes from the plurality of measures that can be used, sometimes yielding contradictory results.

A recent paper by B. Milanovic[15] is very helpful in comparing three different measures of global inequality. The first measure of global inequality "between nations", is based on the levels of different national per-capita incomes; in the second index, national per-capita incomes are weighted by the size of the population of each country ("between countries, weighted by population"). The third global inequality index is very innovative, as it is calculated using individual income levels, irrespective of the nationality of individuals, using data on individual incomes or consumption. This third index is especially relevant for measuring world inequality when considering the world as composed of individuals, not nations.

As the paper shows, the world is today not only more unequal than it was in the Industrial Revolution years, but also unequal in a different way. Today's inequality seems not so much an issue of "class" (that is, due to income differences between rich and poor within the same country), but a matter of "location" (due to differences between the mean incomes of all countries): more than two thirds of total inequality is due to location. Furthermore, among the determinants of personal income the single most important variable (explaining more than 50 per cent of one's income) is the average income of one's country. Thus, seriously dealing with inequality at the global level requires addressing the issue of international population movements – as also Goal 10. seems to highlight. Migrations and forced migrations are indeed at the core of the challenge of ending poverty and hunger.

Income inequality, in facts, is a sort of epiphenomenon of other, deeper forms of inequality in power and in access to material and non-material resources. Local institutions, whether extractive as opposed to inclusive[16], make the difference in poor people's lives; institutional injustice can exact a very high toll on the lives of the poor. Unequal, and iniquitous, access to land – especially for women and indigenous people – is a particularly significant cause of marginalization, poverty and food insecurity. Moreover, asymmetries in role, in power, and in access tend to seep into social structures, because of self-reinforcing "circular causation"[17] mechanisms; they tend to shape local and national institutions and policies and make change very difficult. "*This vision of "might is right" has engendered immense inequality, injustice and acts of violence against the majority of humanity, since resources end up in the hands of the first comer or the most powerful: the winner takes all*"[18].

[15] B. Milanovic, Global Income Inequality in Numbers: in History and Now, *Global Policy*, Volume 4, Issue 2, May 2013.

[16] Acemoglu D., Robinson J.A., *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*, Crown Publishers, New York, 2012.

[17] Myrdal G., *Economic Theory and Underdeveloped Regions*, London: University Paperbacks, Methuen, 1957.

[18] Pope Francis, *Laudato sii*, 2015, n. 82.

CONCLUSION

Remedial action is obviously insufficient to end poverty and hunger. They are complex phenomena to be addressed on the basis of clear scientific and political awareness of existing structures of power and of interdependence. Hence, those who wield greater power should also bear greater responsibility, and promote inclusion and agency by the less privileged so that they can progressively develop their capabilities.

In today's interconnected world, much of traditional food cultures may be forgotten or lost, and access to good quality nutrition in food insecure areas necessarily requires improvements in local agriculture production; but also investments in health provision, in water management, in hygiene and in education, particularly for women and girls; more broadly, achieving food security touches upon (formal and informal) institutions that shape the organization of local communities, and also awareness of the complex forms of interdependence between local communities, national policies, international trade flows and regulations, and international investments.

The Right to Food, Access to Land and Access to Justice

Christophe Golay[1]

This contribution aims to present the history and definition of the right to food (1) and discuss the links between this right and access to land (2). It also gives information about the possibilities to have access to justice when the right to food is violated (3).

1. THE RIGHT TO FOOD

This first part traces the legal and political recognition of the right to food at the international level[2]. The right's inclusion in regional human rights instruments and national constitutions is also touched upon[3].

1.1 *Legal and political recognition of the right to food*

The right to food was first recognized as a human right in the Universal Declaration of Human Rights (UDHR)[4] and the International Covenant on Economic, Social and Cultural Rights (ICESCR)[5]. Article 25 of the UDHR provides that:

Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control[6].

The ICESCR recognizes "*the right of everyone to an adequate standard of living for himself and his family, including adequate food [...] and to the continuous improvement of living conditions*" (Article 11, § 1) as well as "*the*

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[2] This first part is largely inspired from C. Golay and I. Biglino, 'Human Rights Responses to Land Grabbing: a right to food perspective', *Third World Quarterly*, Vol. 34, No. 9, 2013, pp. 1630-1650. See also W. Barth Eide & U. Kracht (eds), *Food and Human Rights in Development. Legal and Institutional Dimensions and Selected Topics*, Antwerpen, Oxford: Intersentia, 2005; J. Ziegler, C. Golay, C. Mahon & S-A. Way, *The Fight for the Right to Food. Lessons Learned*, London: Palgrave Macmillan, 2011.

[3] C. Golay, *The Right to Food and Access to Justice. Examples at the National, Regional and International Levels*, Rome: FAO, 2009.

[4] Adopted by the UN General Assembly on 10 December 1948, resolution 217 A (III).

[5] Adopted by the UN General Assembly on 16 December 1966, resolution 2200 A (XXI); entered into force on 3 January 1976.

[6] Emphasis added.

fundamental right of everyone to be free from hunger" (Article 11, § 2). At the international level, the formal legal recognition of the right to food in the ICESCR – with its two main components being the right to adequate food and the fundamental right to be free from hunger – was not immediately followed by a strong commitment at the political level to ensure its full implementation. It was only in 1996, at the Food and Agriculture Organization (FAO) World Food Summit (WFS), that political leaders made a more solemn commitment towards the realization of the right and requested the UN human rights system to better define it[7]. In response, the UN Committee on Economic, Social and Cultural Rights (CESCR) adopted its General Comment 12 in 1999[8], in which it outlined the normative content of the right to food and states' corresponding obligations, and the UN Commission on Human Rights created the mandate of the first UN Special Rapporteur on the Right to Food in 2000[9]. At the second WFS, organized by FAO in 2002, states welcomed these developments and tasked an intergovernmental working group with the elaboration of Voluntary Guidelines to support the progressive realization of the right to adequate food in the context of national food security (*Right to Food Guidelines*) in order to provide practical guidance for reducing hunger[10]. The *Right to Food Guidelines* are voluntary by nature but they represent an important political commitment to strengthen the implementation of the right to food. They were adopted unanimously by the FAO Council in November 2004 and, since then, they have been used as practical tools by states that have chosen to address hunger through a rights-based approach[11].

With the 2008 global food crisis, the UN Secretary General made a strong appeal to integrate the right to food more effectively in responses to food insecurity. At a high-level meeting on food security in 2009, the Secretary General stated:

We must continue to meet urgent hunger and humanitarian needs by providing food and nutrition assistance and safety nets, while focusing on improving food production and smallholder agriculture. This is the twin-track approach [...]. We should be ready to add a third track, the right to food, as a basis for analysis, action and accountability[12].

The recognition of the right to food at the international level was not mirrored at the regional level, where the right appears explicitly in only one instrument, the Protocol of San Salvador completing the American Convention on Human

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[7] FAO, *Rome Declaration on World Food Security* (13-17 November 1996), § 1, and *World Food Summit Plan of Action*, 1996, Goal 7.4, § 6.1.

[8] CESCR (CESCR), *General Comment 12: The right to adequate food*, UN Doc. E/C.12/1999/5, 12 May 1999.

[9] The mandate was created by resolution 2000/10 of the Commission on Human Rights. See websites of the first two mandate-holders at www.righttofood.org and www.srfood.org.

[10] FAO, *Declaration of the World Food Summit: five years later*, § 10.

[11] See FAO, *Right to Food. Making it Happen. Progress and Lessons Learned through Implementation*, Rome: FAO, 2011. Also see www.fao.org/righttofood.

[12] The speech is available at: http://www.un.org/apps/news/infocus/sgspeeches/search_full.asp?statID=413.

Rights, which is characterized by weak enforcement mechanisms[13]. To fill this gap, other human rights, including the rights to life, health, environment, and property, have been used to protect the right to food indirectly in the African and Inter-American human rights systems[14]. At the national level, the right to food has been incorporated in a growing number of constitutions in the last twenty years, most recently in Brazil, Bolivia, Ecuador and Kenya, and it is being been increasingly adjudicated by courts[15].

1.2 *Definition of the right to food and states' corresponding obligations*

In its General Comment 12, the CESCR provides the following definition of the right to food:

The right to adequate food is realized when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement[16].

According to this definition, all human beings have a right to food that is available in sufficient quantity, nutritionally and culturally adequate and physically and economically accessible[17]. Interpreting the right to food through the lens of human dignity, the UN Special Rapporteur on the Right to Food has underlined that it is the right of every human being to feed oneself and one's family with dignity[18]. As stated in the *Right to Food Guidelines*, this can be achieved by ensuring everyone's access to productive resources, in particular land, water, and seeds, but also fisheries or forests, as well as access to labor or social assistance schemes[19].

The corresponding obligations of states were first developed by human rights experts[20] and subsequently defined by the CESCR, the UN Special Rapporteur on the Right to Food and by states through the adoption of the *Right to Food Guidelines*. It is now generally accepted that state parties to the ICESCR

[13] The Protocol of San Salvador was adopted on 17 November 1988 by the General Assembly of the Organization of American States. See Articles 12, 15 and 17. Aside from the right to education and the right to organize and join unions, the rights recognized in the Protocol of San Salvador cannot be adjudicated before the Inter-American Commission or Court on Human Rights. See Article 19 (6).

[14] C. Golay, *The Right to Food and Access to Justice. Examples at the National, Regional and International Levels*, Rome: FAO, 2009, pp. 37-46.

[15] See L. Knuth & M. Vidar, *Constitutional and Legal Protection of the Right to Food around the World*, Rome: FAO, 2011; C. Golay, *The Right to Food and Access to Justice*, pp. 47-58.

[16] CESCR, *General Comment 12*, § 6. This definition was clearly inspired by the definition of food security adopted by states in the 1996 WFS Plan of Action. FAO, *World Food Summit Plan of Action*, 1996, § 1.

[17] CESCR, *General Comment 12*, §§ 6-8.

[18] Report of the Special Rapporteur on the right to food Mr. Jean Ziegler, UN Doc. A/HRC/7/5, 10 January 2008, § 18. *Right to Food Guideline* 1.1 provides that states should create the conditions "*in which individuals can feed themselves and their families in freedom and dignity*".

[19] See *Right to Food Guidelines* 8, 13, 14.

[20] Commission on Human Rights, *The right to adequate food and to be free from hunger. Updated study on the right to food, submitted by A. Eide*, UN Doc. E/CN.4/Sub.2/1999/12, 28 June 1999.

have the obligation to respect, protect and fulfil the right to food, without any discrimination[21]. The obligation to *respect* is essentially an obligation to refrain from action that would interfere with the right to food. The obligation to *protect* requires states to ensure that enterprises and private individuals do not deprive individuals of their access adequate food. The obligation to *fulfil* implies that states should, first of all, *facilitate* the realization of the right to food by creating an environment that enables individuals and groups to feed themselves by their own means, and, second, *provide* the right to food for those who are not capable of feeding themselves for reasons beyond their control[22].

In respecting, protecting and fulfilling the right to food, states must comply with human rights principles, in particular the principles of Participation, Accountability, Non-discrimination, Transparency, Human dignity, Empowerment and the Rule of law (PANTHER)[23]. When they develop and implement food security strategies, policies and programmes, states must, therefore, consult and inform all relevant actors, adopt and use budgets in a transparent manner, and take measures with the explicit aim of improving the realization the right to food, especially with respect to vulnerable groups. States must also ensure that these steps empower rights holders to claim their rights and duty bearers to fulfil their obligations. Finally, under this framework, access to justice must be available to victims of violations of the right to food[24]. In the context of Large-Scale International Land Transactions (LSLTs), the foregoing discussion entails that the conclusion and implementation of LSLTs should not lead to violations but, rather, to a better realization of the right to food, and should be carried out in compliance with the foregoing human rights principles[25].

2. ACCESS TO LAND AND SECURITY OF TENURE AS KEY COMPONENTS OF THE RIGHT TO FOOD[26]

Access to land and security of tenure are guiding threads in the work of the CESCR[27] and the UN Special Rapporteur on the Right to Food, and clearly surface in the *Right to Food Guidelines*. The Special Rapporteur has stated, for example, that:

[21] See CESCR, *General Comment 12*, § 15; Preface and introduction to the *Right to Food Guidelines*, § 17.
[22] Ziegler *et al*., *The Fight for the Right to Food*, pp. 18-22.
[23] O. De Schutter, *Countries tackling hunger with a right to food approach*, Briefing Note 1, Special Rapporteur on the right to food, 2010; FAO, *Right to Food. Making it Happen. Progress and Lessons Learned through Implementation*, Rome: FAO, 2011, pp. 6-7.
[24] C. Golay & M. Büschi, *The Right to Food and Global Strategic Frameworks: The Global Strategic Framework for Food Security and Nutrition (GSF) and the UN Comprehensive Framework for Action (CFA)*, Rome: FAO, 2012, pp. 13-17.
[25] On the different roles played by states in dealing with large-scale land acquisitions, see W. Wolford, S.M. Borras Jr., R. Hall, I. Scoones and B. White, 'Governing Global Land Deals: The Role of the State in the Rush for Land', *Development and Change*, 44(2), 2013, pp. 189-210.
[26] This second part is largely inspired from C. Golay and I. Biglino, 'Human Rights Responses to Land Grabbing: a right to food perspective', *Third World Quarterly*, Vol. 34, No. 9, 2013, pp. 1630-1650.
[27] CESCR, *General Comment 12*, § 13.

[T]he right to food requires that States refrain from taking measures that may deprive individuals of access to productive resources on which they depend when they produce food for themselves (the obligation to respect), that they protect such access from encroachment by other private parties (obligation to protect) and that they seek to strengthen people's access to and utilization of resources and means to ensure their livelihoods, including food security (the obligation to fulfil).

In two reports presented to the General Assembly in 2002 and 2010, the first and second Special Rapporteurs on the Right to Food emphasised the need to guarantee access to land and security of tenure, including through agrarian reform, to ensure the right to food of rural communities[28]. Both underlined that access to land is essential for the majority of people suffering from hunger, who work as smallholder farmers or agricultural labourers because the land they have is not sufficient or otherwise inadequate[29]. Olivier De Schutter, in particular, has highlighted the special needs of indigenous peoples, smallholders, pastoralists and fisherfolk, and concluded that for many of them, private ownership of land and market-led land reforms are not the most suitable options. Instead, he recommended that states recognize the emergence of a human right to land and take measures to make it a reality through the recognition of different categories of land use, including communal property[30].

The two first Special Rapporteurs have also underlined that women and indigenous people enjoy special protection in international law. Women's rights to land and property are recognized in the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)[31], and the rights of indigenous peoples in the International Labour Organization (ILO) Convention No. 169 concerning Indigenous and Tribal Peoples and the UN Declaration on the Rights of Indigenous Peoples[32]. Indigenous peoples' rights of ownership, possession and control of their land, territories and resources, and states' obligations to guarantee their effective protection, as well as the requirement of indigenous peoples' prior, free and informed consent, are particularly important in the context of LSLTs[33]. Finally, the need to protect access to land has also been a

[28] Report of the Special Rapporteur on the right to food Mr. Jean Ziegler, UN Doc. A/57/356, 27 August 2002, §§ 22-42; Report of the Special Rapporteur on the right to food Mr. Olivier De Schutter, UN Doc. A/65/281, 11 August 2011.

[29] It is estimated that 50% of the world's hungry are smallholder farmers, 20% landless people, and 10% herders, pastoralists or fisherfolk. UN Millenium Project, Task Force on Hunger, *Halving hunger: It can be done: Summary version*, New York: UN Development Programme, 2005, pp. 4-6.

[30] Report of the Special Rapporteur on the right to food Mr. Olivier De Schutter, UN Doc. A/65/281, 11 August 2011, §§ 39-43. See also O. De Schutter, 'The Emerging Human Right to Land', International Community Law Review, 12, 2010, pp. 303-334. This reference to the commons can be seen as being part of a broader societal recognition of common property resources. See K. Milun, *The Political Uncommons*, Farham: Ashgate, 2011.

[31] See Articles 14 (2) and 16 of CEDAW.

[32] The Declaration on the Rights of Indigenous Peoples was adopted by the UN General Assembly on 13 September 2007, resolution 61/295.

[33] See, in particular, Articles 13-19 of the ILO Convention No. 169 concerning Indigenous and Tribal Peoples, and Articles 8, 10 and 26 of the UN Declaration on the Rights of Indigenous Peoples.

central element in the Special Rapporteur on the Right to Food's reports on his recent missions to China, Mexico, South Africa and Madagascar[34].

Finally, when states adopted the *Right to Food Guidelines*, they recognized that the right to food protects the right of rural communities to access productive resources or the means of food production, including land[35]. The *Guidelines* provide that:

States should pursue inclusive, non-discriminatory and sound economic, agriculture, fisheries, forestry, land use, and, as appropriate, land reform policies, all of which will permit farmers, fishers, foresters and other food producers, particularly women, to earn a fair return from their labour, capital and management, and encourage conservation and sustainable management of natural resources, including in marginal areas[36].

The consensus of states with regard to their obligations to respect, protect and fulfil the right to food in the context of productive resources further emerges in the Guidelines as follows:

States should respect and protect the rights of individuals with respect to resources such as land, water, forests, fisheries and livestock without any discrimination. Where necessary and appropriate, States should carry out land reforms and other policy reforms consistent with their human rights obligations and in accordance with the rule of law in order to secure efficient and equitable access to land and to strengthen pro-poor growth. [...] States should also provide women with secure and equal access to, control over, and benefits from productive resources, including credit, land, water and appropriate technologies[37].

3. ACCESS TO JUSTICE IN CASE OF VIOLATIONS OF THE RIGHT TO FOOD

Victims of violations of the right to food, and their defenders, have various venues and tools at their disposal to claim their rights. These include referral to national human rights institutions or national judges, communications to regional or international treaty bodies or to the United Nations Special Rapporteur on the right to food, and parallel reports to the Committee on Economic, Social and Cultural Rights (CESCR) or to the United Nations Human Rights Council. These different ways of seeking remedies have been used by thousands of victims of right to food violations during the last twenty years. The objective of this article is to provide a brief overview of their experiences.

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[34] Respectively, Report of the Special Rapporteur on the right to food Mr. Olivier De Schutter on his mission to China, UN Doc. A/HRC/19/59/Add.1, 20 January 2012; on his mission to Mexico, UN Doc. A/HRC/19/59/Add.2, 17 January 2012; on his mission to South Africa, UN Doc. A/HRC/19/59/Add.3, 13 January 2012; and on his mission to Madagascar, UN Doc. A/HRC/19/59/Add.4, 26 December 2011.

[35] *Right to Food Guideline* 8.

[36] *Right to Food Guideline* 2.5.

[37] *Right to Food Guidelines* 8.1. & 8.6.

3.1 *National Human Rights Institutions*

The *Right to Food Guidelines*, adopted by member states of the FAO in 2004, recommends the creation of national human rights institutions in every country and the inclusion of the progressive realization of the right to food within their mandate[38]. Currently there is at least one such institution in more than a hundred countries[39]. Varying in structure and mandate, examples include National Commissions, Offices of the Ombudsperson, Mediators, and *Defensores del Pueblo*. Some are competent to receive complaints in the case of a violation of the right to food, and some can represent victims before the courts (see the case of Argentina below). Some of these institutions, like the South African Human Rights Commission, are also mandated to carry out annual evaluations of the progressive realization of the right to food in their country[40].

3.2 *Judges*

The possibility of referring cases to judges when violations of the right to food occur varies from country to country. In most countries, the right to food is not recognized as a fundamental right and judges do not consider it justiciable. However, in some countries, victims may be able to use the courts to obtain justice for violations of the right to food. These cases may be based on the right to food itself or on other fundamental rights like the right to life or dignity. Examples include Argentina, South Africa, Colombia, India and Switzerland[41]. The adoption of a framework law on the right to food increases possibilities of accessing justice through national courts[42].

In Argentina, for instance, the *Defensor del Pueblo* appealed to the Supreme Court in order to force the state to provide food assistance and structural development to vulnerable indigenous communities in the Chaco Province[43]. In South Africa, the High Court of the Cape of Good Hope Province annulled a law (*Marine Living Resources Act*), that favored commercial fishing, in order to protect the right to food of traditional fishing communities[44]. In Colombia, the Constitutional Court protected the right to food of internally displaced peoples[45].

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[38] See Right to Food Guideline 18 on national human rights institutions, www.fao.org/righttofood.

[39] The list of institutions is available at www.nhri.net.

[40] See the website of the South African Human Rights Commission, www.sahrc.org.za.

[41] See C. Golay, *The Right to Food and Access to Justice: Examples at the National, Regional and International levels*, FAO, 2009 (available online in French, English, Spanish and Portuguese, http://www.fao.org/docrep/016/k7286e/k7286e.pdf).

[42] This is, for instance, the case in Guatemala and in Brazil, as in numerous other countries. Read Olivier de Schutter, 'Countries tackling hunger with a right to food approach', Briefing Note 1, May 2010, www.srfood.org/images/stories/pdf/otherdocuments/20100514_briefing-note-01_en.pdf. It is also worth noting that a framework law on the right to food has been recently adopted in India.

[43] Argentina, Corte Suprema de Justicia de la Nación, *Defensor del Pueblo de la Nación c. Estado Nacional y otra* (2007).

[44] South Africa, High Court, *Kenneth George and Others v. Minister of Environmental Affairs & Tourism* (2007).

[45] Colombia, Corte Constitucional, *Acción de tutela instaurada por Abel Antonio Jaramillo y otros contra la Red de Solidaridad Social y otros* (2004).

In India, the Supreme Court has been putting pressure on state authorities since 2001 to implement the food distribution programs previously elaborated by the central government[46]. Finally, in Switzerland, the Federal Court (*Tribunal Fédéral*) has developed important jurisprudence on the protection of the right to food of undocumented people and rejected asylum seekers[47].

3.3 *Regional Mechanisms*

As we have seen, Africa, the Americas and Europe are home to the three main regional human rights protection systems. In Africa and the Americas, they have already provided access to justice for some victims of violations of the right to food although the success of state responses has been mixed.

In the Ogoni case, the African Commission on Human and Peoples' Rights found that the Nigerian government violated the right to food of Ogoni communities particularly because it had failed to supervise the activities of oil companies, both national and transnational. These activities had destroyed the natural resources of the Ogoni[48]. However, the Commission was not able to ensure concrete responsive measures from government or from the oil companies. Although several years have passed since the Commission's decision, the living conditions of Ogoni communities have not improved[49].

In the Americas, decisions issued by the Inter-American Commission and Court have enabled various indigenous communities to recover access to their traditional lands. For instance, the Inter-American Commission on Human Rights protected the rights of the Yanomani community (more than 10,000 people) which were threatened by highway construction projects and mining activities in Brazil[50]. The Inter-American Commission also brought about an amicable settlement with the government of Paraguay enabling Lamenxay and Riachito indigenous communities to recover their ancestral lands and receive food assistance until they could actually return to their lands[51]. In two cases – *Mayagna (Sumo) Awas Tingni Community v. Nicaragua*[52] and *Sawhoyamaxa*

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[46] India, Supreme Court, *People's Union for Civil Liberties Vs. Union of India & Ors* (2001). See the website of the Right to Food Campaign in India, www.righttofoodindia.org.

[47] Federal Court, *V. gegen Einwohnergemeinde X. und Regierungsrat des Kantons Bern* (1995); *B. gegen Regierung des Kantons St.Gallen* (1996); *X. gegen Departement des Innern sowie Verwaltungsgericht des Kantons Solothurn* (2005); *X. gegen Sozialhilfekommission der Stadt Schaffhausen und Departement des Innern sowie Obergericht des Kantons Schaffhausen* (2004).

[48] African Commission on Human and Peoples' Rights, SERAC, *Center for Economic and Social Rights v. Nigeria* (2001).

[49] Commission, Report of the African Commission on Human and Peoples' Rights Working Group of Experts on Indigenous Populations/Communities (21 April 2005). UN Doc. E/CN.4/Sub.2/AC.5/2005/WP.3, pp. 19-20.

[50] Inter-American Commission on Human Rights, Brazil, Case 7615, Resolution 12/85, 5 March 1985; Report on the Situation of Human Rights in Brazil, 29 September 1997.

[51] Inter-American Commission on Human Rights, Enxet-Lamenxay and Kayleyphapopyet (Riachito). Paraguay (1999).

[52] Inter-American Court of Human Rights, *Mayagna (Sumo) Awas Tingni Community v. Nicaragua* (2001).

v. Paraguay[53], the Inter-American Court of Human Rights interpreted the right to property of indigenous peoples as including the state's obligation to recognize, demarcate, and protect the right to collective ownership of land, and in particular to guarantee indigenous peoples' access to their own means of subsistence.

3.4 *The United Nations Treaty Bodies*

Every UN human rights treaty includes a monitoring body comprised of independent experts. These treaty bodies supervise state measures to implement protected rights by examining periodic state reports. During this examination, civil society organizations can submit parallel reports. In many parallel reports related to the provisions of the International Covenant on Economic, Social and Cultural Rights (ICESCR), non-government organizations (NGOs) – particularly FIAN – have denounced violations of the human right to food. The Committee on ESCR (CESCR) has often supported them, urging the state in question to take concrete measures to respect, protect and fulfill the right to food. For example, in 2007, the CESCR requested the Government of Madagascar to facilitate land acquisition by local farmers as well as to obtain the free, prior and informed consent of local people before signing any contract with foreign companies interested in buying or leasing land[54]. Likewise, during Germany's examination in 2011, the CESCR requested the Government to take concrete measures to ensure that export subsidies favoring German producers do not lead to violations of the right to food in other countries[55].

In addition to examining state reports, some treaty bodies can receive individual or collective complaints. For example, detainees or their relatives appealed to the Human Rights Committee to protect their right to food on the basis of the Optional Protocol to the International Covenant on Civil and Political Rights. They argued that violations of the right to food also violated their right to be treated with humanity and dignity as well as to be free from cruel, inhuman or degrading treatment. In *Mukong c. Cameroon*, the Human Rights Committee found that the detention conditions of Mr. Mukong, who did not receive food for several days, amounted to cruel, inhuman and degrading treatment[56]. In various cases, the Human Rights Committee has protected the right to food of indigenous communities, who claimed the right of minorities to enjoy their own culture as defense against mining activities on their lands[57]. Since 2013, it is also possible to present individual and collective cases, or cases on behalf of

[53] Inter-American Court of Human Rights, *Sawhoyamaxa Indigenous Community v. Paraguay* (2006).
[54] Committee on Economic, Social and Cultural Rights, Concluding Observations. Madagascar (16 December 2009), Doc. ONU E/C.12/MDG/CO/2, par. 12.
[55] Committee on Economic, Social and Cultural Rights, Concluding Observations. Germany (20 May 2011), Doc. ONU E/C.12/DEU/CO/5, par. 9.
[56] Human Rights Committee, *Mukong c. Cameroon* (1994). See also *Human Rights Committee, Lantsova c. Fédération de Russie* (2002).
[57] Human Rights Committee, *Länsman et al. v. Finland* (1994), par. 9.5.

victims, to the CESCR based on the Optional Protocol to the ICESCR adopted by the General Assembly in 2008[58].

3.5 *The United Nations Special Rapporteur on the Right to Food*

The mandate of the United Nations Special Rapporteur on the Right to Food was established by the Human Rights Commission in 2000. Jean Ziegler held this position for eight years[59], and in May 2008, Olivier De Schutter succeeded him[60]. He was replaced by Hilal Elver in June 2014. In order to promote and protect the right to food, the Special Rapporteur has three tools at its disposal: a) submission of thematic reports to the Human Rights Council and the United Nations General Assembly; b) country missions *in situ* to supervise the protection of the right to food in the concerned country; c) communications to states when concrete cases of violations of the right to food occur, often on the basis of information received from NGOs and social movements. Most of the communications received by the Special Rapporteur concern the lack of implementation of food assistance schemes or forced evictions or displacements of farming or indigenous communities for the benefit of companies involved in mining, oil and gas extraction, or for the exploitation of land or forest resources[61]. The Special Rapporteur on the Right to Food is an important resource for NGOs and social movements, since s/he is easily accessible (even by email or mail) and relies to a great extent on cooperation with civil society to fulfill the mandate[62].

3.6 *Reports to the Human Rights Council for the Universal Periodic Review*

The Universal Periodic Review (UPR) is the new mechanism of the United Nations Human Rights Council, established in June 2006[63]. This mechanism requires that all United Nations member states are evaluated every four years by their peers to determine if they are complying with obligations to respect, protect and realize all human rights in their country. The examination is carried out on the basis of a state report (20 pages maximum), and two reports compiled by the High Commission for Human Rights based on information issued by United Nations bodies (10 pages) and on contributions from civil society (10 pages).

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[58] This Optional Protocol was adopted by the United Nations General Assembly on 10 December 2008, and it entered into force on 5 May 2013. See I. Biglino and C. Golay, The Optional Protocol to the International Covenant on Economic, Social and Cultural Rights, Geneva Academy of International Humanitarian Law and Human Rights, Academy In-Brief No. 2, 2013 (www.geneva-academy.ch).

[59] See J. Ziegler, C. Golay, C. Mahon, S-A. Way, *The Fight for the Right to Food. Lessons Learned*, London: Palgrave Macmillan (2011). See also the website about the work of Jean Ziegler, www.righttofood.org.

[60] See the website about the work of Olivier de Schutter, www.srfood.org.

[61] See, for instance, Human Rights Council, Report of the Special Rapporteur on the Right to Food, Olivier de Schutter. Addendum. Summary of communications sent and replies received from governments and other actors (11 February 2010), UN Doc. A/HRC/16/49/Add.1.

[62] All necessary information to send a communication to the Special Rapporteur is available online, http://www2.ohchr.org/french/issues/food/complaints.htm.

[63] See Melik Özden, *The Human Rights Council and its Mechanisms*, CETIM, Critical Report no. 1, 2008 (available online in French, English and Spanish, http://www.cetim.ch/fr/publications_cahiers).

Since its first session in April 2008, the UPR has been used by numerous NGOs to denounce violations of the right to food. *Global Rights*, the *Center for Economic and Social Rights*, *FIAN International* and their partners have for example denounced violations of the right to food by the governments of Guinea[64], Equatorial Guinea[65], Congo-Brazzaville[66] and Ghana[67]. In their reports to the UPR, these NGOs highlighted violations of the right to food resulting from the exploitation of natural wealth and resources in these four countries, mostly by foreign companies. The reports emphasized that the state had not applied a sufficient portion of income generated by such activities to programs designed to realize its human right to food obligations.

CONCLUSION

To conclude, access to land is a key component of the right to food. And thousands of victims have used at least one way of seeking remedies for violations of the right to food. In many cases, their effort led to small but real improvements. In a few cases – for example in the Ogoni case – the impact was minor or non-existent. One of the important tasks for right to food defenders in the years to come will be to share more information about these different cases and try to understand why some succeeded and others failed to improve the effective enjoyment of the right to food by the victims of violations.

[64] CODDH, CECIDE, Global Rights, *Dégradation de la situation des droits de l'homme en Guinée*. Rapport conjoint des organisations de la société civile à l'Examen périodique universel du Conseil des Droits de l'Homme des Nations Unies, May 2008.

[65] Center for Economic and Social Rights, Center for Economic and Social Rights Individual Submission to the Office of the High Commissioner for Human Rights on the Occasion of the Sixth Session of the Universal Periodic Review December 2009. *Equatorial Guinea. A Selective Submission on Compliance with Economic, Social and Cultural Rights Obligations*, accessible at: http://www.cesr.org/downloads/CESR-individual%20submission-Equatorial%20Guinea-December%202009.pdf.

[66] Rencontre pour la Paix et les Droits de l'Homme, Commission Justice et Paix, Global Rights, *Exploitation du Pétrole et Les Droits Humains au Congo-Brazzaville*. Rapport à l'intention de la 5ème session de l'Étude Périodique Universelle de la République du Congo, November 2008.

[67] FIAN International, *Human Rights Violations in the Context of Large-Scale Mining Operations*, submission presented to the UN Human Rights Council at the Occasion of the Universal Periodic Review of Ghana in May 2008.

PART TWO
Access to land

Increasing commercial pressures on land: where are we heading?

Michael Taylor[1]

The Food Price Crisis that peaked in 2008 brought to world attention questions of world food security, and its relation to the land and natural resources on which food supply is based. Motivated by a desire to ensure national food security free from the risks posed by volatile global food markets, cash-rich but water-poor countries such as South Korea, Libya, Saudi Arabia, Qatar and Abu Dubai followed aggressive strategies of offshore land acquisition for food production. Such land was often in countries such as Sudan, Ethiopia, Kenya, Madagascar, Mozambique, Mali and Democratic Republic of Congo. Being largely in countries that are as yet unable to meet their own food security needs, and happening at a time that FAO reported the number of hungry in the world had topped the one billion mark, the moral dilemmas it poses are stark.

The World Bank's recent report "*Rising Global Interest in Farmland: Can it yield sustainable and equitable benefits?*" estimates that 42 million Ha of land was subject to investor interest in 2008 alone[2]. Because of the lack of transparency in many such deals, the true figure is unknown. The Land Matrix (www.landmatrix.org) documents over 37 million Ha of deals, with a further 7.8 million still under negotiation. Due to the lack of transparency and data availability, the true figures are certainly much higher.
Beyond the headline-grabbing 'land grabs', however, lie deeper questions posed by the changing relations between land and society; not only about control of food production and consumption, but also the wider social and economic relations that derive in agrarian societies largely from how land is distributed. The way land is allocated and managed plays a central role in enabling or hindering economic development, food security, social justice, and environmental sustainability at local, national and global scales.

Before going further, a number of myths deserve to be de-bunked. Firstly, although emergent investor countries seeking food security have gained much attention, *most reported large-scale land acquisitions continue to be made by western-based companies motivated by profit* rather than being driven by middle- or far-eastern national security agendas. Secondly, although large-scale foreign acquisitions of land may be the most visible, the cumulative effects of many *small and medium 'land grabs' by national elites is in many cases a greater source* of pressure on land in host countries. In many cases this

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The views of this paper are a perspective from the secretariat, and should not be taken to represent the views of the coalition as a whole.

[2] Klaus Deininger and Derek Byerlee, (2011), *Rising Global Interest in Farmland: Can it yield sustainable and equitable benefits?*, The World Bank, Washington.

involves privatising common-pool resources for little or no cost and holding it for speculative purposes, including for eventual commercial production by foreign investors. Thirdly, and crucially, there is a growing understanding that *the myth of there being large tracts of unused, idle, empty or 'available' productive land that is free of claim from land-users or is not performing important ecosystem services is invariably incorrect*, despite its continued use as justification for large-scale land allocations by states to investors.

Four-fifths of food production in the global south comes from the fields of 500 million small-scale farmers. In addition, livestock-keepers and fisher-folk contribute significantly, relying on access to extensive common-pool grazing and water resources for their production systems. Most of these producers are among the 1-2 billion people on the globe today that are labelled by Liz Alden Wily as 'tenants of the state'[3]. They use land and natural resources under customary tenure regimes, but the land and natural resources on which they live is classed as 'state land', and thus land rights are not legally recognised or protected. It is this land that is most vulnerable to being 'grabbed' by governments and allocated to investors in efforts to achieve productivity gains.

With a growing population and changing consumption patterns, the trends that we see today are likely to continue. Global demand for energy is increasing and demand for food is expected to double over the next fifty years. This will raise the stakes in competition for land and natural resources. Research undertaken by the International Land Coalition amongst its members on the links between land tenure and food security[4] emphasises some basic principles: insecure and inequitable access to land have fuelled, facilitated and increased vulnerability to food price volatility; secure and equitable access to land works as a safety net to mitigate risks related to food price volatility and assured long term food security; and equitable and secure access to land and diversified production are key to protect ecosystems, combat land degradation and ensure food security.

The competition for land and natural resources has always been an uneven playing field in which the poorest have been prone to losing most. However, the competition that small-scale producers face for their land is no longer simply a function of increasing population, a shrinking resource base due to degradation, or the speculative efforts of local elites. Land is becoming a globalised commodity, in which local producers are competing for the same resource with large international companies that produce food, fuel and fibre, sequester carbon, sell large 'unspoilt' landscapes to tourists, extract minerals, or – increasingly – seek to realise short and medium term gains for investor capital. As land, which was often held for the common good, is being individualised

[3] Alden Wily, L. (2008), "Whose Land Is It? Commons and Conflict States", Rights and Resources Initiative, Washington DC. Available at http://www.rightsandresources.org/documents/files/doc_ 853.pdf.

[4] Miggiano, L. et al. (2010), "Links between Land Tenure Security and Food Security" Contribution of the International Land Coalition to the Updating of the High Level Task Force's (HLTF) Comprehensive Framework for Action (CFA), ILC, Rome. Available at http://www.landcoalition.org/wp-content/uploads/links.pdf.

and commodified, it becomes a good of increasingly transnational significance. It is traded across countries, and the idea of land being sovereign property that aligns with territorial boundaries no longer holds.

One of the findings of the World Bank report is that investor interest in large-scale land related investments is highest where governance is weakest. What can be expected in these areas is a gradual rolling-back of the state from ensuring accountability and providing services. Studies in Peru[5] in the extensive areas converted over the past two decades from smallholder production to large production estates of private companies paint a picture of rural 'communities' who have come to rely on companies not only for employment opportunities, but for every form of service provision; water, electricity, health, education, road maintenance, etc. Such rural private 'fiefdoms' can no doubt bring substantial economic benefits that did not exist before, but at the same time they create a situation of extreme vulnerability of the rural populations within them to the desires and demands of a private enterprise which is driven by interests that may not be aligned with those of local populations. This often occurs in contexts where the state has low capacity to enforce minimum labour, environmental or social standards.

Counterbalancing the trend towards territorial control by private companies on the one hand, are the successes in gaining recognition for the legitimacy of 'territorial development' for local communities. Indigenous groups in particular have been successful in gaining tenure and management rights over extensive areas of land based on customary land use and management practices. This not only allows local communities to define themselves the trajectory of land and natural resource-based development that they would like to work towards, but it also gives local communities some autonomy in managing the competition for land and natural resources. In particular, by recognising a legitimate 'owner' of extensive tracts of land, the vulnerability of common-pool resources to being individualised by those with the economic and political power to do so is reduced. The large-scale registration of tenure rights at community-level over the commons is a priority, to reduce their vulnerability to continued fragmentation and individualisation in the hands of elite, whether local or international.

It is clear, then, that questions of land governance and food governance are becoming more complex. The primacy of land governance at the single level of the nation-state is weakening. On the one hand, decisions of land use and management are in many places being decentralised to local or territorial levels, in part driven by demand from organised social movements and producer groups. At the same time, decisions on land governance are also increasingly influenced by transnational market forces, penetrating into large areas of the world that were previously peripheral to market production. In parallel to this are global imperatives increasingly influencing decisions over management of

[5] More information available at http://www.observatoriotierras.info/, (CEPES – Centro Peruano de Estudios Sociales, International Land Coalition and Oxfam).

land and natural resources relating to food and fuel security, climate change and carbon sequestration, biodiversity conservation and human rights.

The food price crisis and sharp increase in land-related investment caught governments unawares, and they did not have the tools to adequately interpret or manage these phenomena. Now they are trying to catch up; New Zealand, Brazil, some states of India, for example, are moving towards banning the sale of agricultural land to foreigners. Several donor and UN agencies worked on proposals to provide global benchmarks for good land governance and for responsible agricultural investment, in particular the Committee for World Food Security's Voluntary Guidelines on Governance of Tenure of Land, Fisheries and Forests, and their Responsible Agricultural Investment Guidelines. While it is clear that some form of global benchmarking, accountability, or regulation is necessary, exactly what forms these should take, and what their content should be, is open to considerable contestation. Moreover, the relative influence of these processes in the face of the overwhelming influence of global markets and trade regimes is at best limited.

Building an informed global response to the increasing tide of land-related investments depends on understanding more fully its drivers, impacts and trends. One of the findings that has clearly emerged across case studies is in relation to who wins and who loses from large-scale land related investments. It is evident that those that are already poor lose most, particularly women and common-property users. Land and natural resources are a critical safety-net for the poorest in agrarian societies, and it is these sections of society who have most to lose and least to gain from large-scale conversions of their land into industrial-scale production.

Considering impacts on women, for example, our analysis undertaken in the field studies, finds that women's increased vulnerability to the impacts of commercial pressures on land vis-à-vis men is a function of the wider discrimination that women already face[6]. This has four dimensions: **firstly**, through the constraints women generally face in relation to their access to, ownership of and control of land; **secondly** through the systemic discrimination they generally face in socio-cultural and political relations and thus decisions on land-use changes; **thirdly**, through the state of relative income poverty of women *vis-à-vis* men, which affects women's ability to participate in the land market and is also related to the generally lower cash wages women receive relative to men worldwide for paid work; and **fourthly,** women's general physical vulnerability *vis-à-vis* men, as manifested in gender-based and sexual violence against women, and which is directly linked to women's experience of land loss through "property grabbing".

[6] See for example, *Women's Land, Reflections on rural women's access to land in Latin America*, accessible at: http://www.landcoalition.org/sites/default/files/documents/resources/MOKORO_Gender_web_11.03.11.pdf.

The growing body of empirical research, being produced by an increasingly wide variety of organisations, including UN Agencies, universities, research centres, social movements and farmers' organisations, has the potential to feed a more informed debate on appropriate responses. Evidence of this is the World Bank's recent report, whose empirical basis gives an unprecedented opportunity to examine who wins and who loses when large-scale land-based investments take place, and indeed to what extent the *'win-win' solutions that the World Bank and others had been enthusiastically promoting may be possible to achieve in practice. The report admits that 'many investments... failed to live up to expectations and, instead of generating sustainable benefits, contributed to asset loss and left local people worse off than they would have been without the investment'* (p. 51). Although the optimistic conclusions of the report may still be somewhat out of sync with its empirical evidence, a shift is discernible in the increased caution with which the World Bank now appears to be balancing the opportunities and risks posed by large-scale land-based investments.

There is no doubt that investment in agricultural production in the south is sorely needed after two decades of declining support to agriculture by donors and many governments. However, what kind of investment is needed should be carefully considered. As the former Special Rapporteur on the Right to Food, Professor Olivier de Schutter, warned in a recent address to the General Assembly[7], the current crisis and fear of food shortages should not lead to short-sighted solutions that undermine both the food security of the poorest and their land rights.

Prof de Schutter has made the link between access to land and food security a major focus of his tenure as the Special Rapporteur, arguing that foundational to the right to food is an inferred a right to land. He emphasizes the need for both socially and environmentally sustainable solutions to overcoming hunger; including the promotion of investment models that do not lead to evictions, disruptive shifts in land rights and increased land concentration. He also calls for land redistribution to landless and near-landless farmers to counter the trends towards land concentration. Countries in Latin America such as Peru that underwent land reform in the 1970s, now find themselves after two decades of trade liberalisation with higher levels of land concentration than existed prior to their land reform. The concentration of political and economic power that accompanies the concentration of land ownership now provides an almost insurmountable obstacle to meaningful land reform in many countries.

At the heart of the debate about large-scale investments in land, agriculture and other natural resources is the question of agricultural development models in the 21st Century, and the place that small-scale producers take in achieving

[7] De Schutter, O. (2010), "Access to Land and the Right to Food" Report of the Special Rapporteur on the right to food presented at the 65th General Assembly of the United Nations [A/65/281], 21 October 2010. Available at http://www.srfood.org/images/stories/pdf/officialreports/20101021_access-to-land-report_en.pdf.

food security. This is not a rhetorical question between industrialised agriculture and family farming; clearly both are needed. However, agricultural, trade, investment and land policies play a large role in favouring one over the other, and so far it is evident that small-scale producers have been net losers from predominant policies. The IAASTD report[8], released in 2009 and authored by hundreds of agricultural experts, identifies small-scale farmers in particular as a key target group to successful food systems of the future, and calls for a shift in paradigm in this direction. The debate between small-scale and large scale agricultural production models is not new, and remains subject to controversy. Nonetheless, it is now taking place within a context of increasingly fierce – and increasingly uneven – competition for scarce resources such as land and water. The implications of either not taking action, or of taking the wrong action, are far-reaching and – as is often the case on questions relating to land use and ownership – hard to undo once they are done.

Opposing views on how land should be used, and by whom, are often conflictual, precisely because they challenge or uphold the bases on which economies are built or societies structured. Debates (or wars) that arise are rarely between equals, and those whose livelihoods are most tied to land and natural resources, and have fewest other alternatives, usually have the weakest ability to make their voices heard.

The phenomenon of large-scale land-related investments is emblematic of the increasing competition for scarce resources, in particular those – such as land and water – needed to produce food. Attempts to put in place global-level mechanisms to guide questions of land governance and land-related investments deserve wide debate, particularly by those most affected. Some positions will inevitably be irreconcilable, while other positions may be prompted by evidence to converge. For example, the increasing evidence on risks – and lost opportunities – of large-scale land acquisitions as a model for agricultural investment appears to be prompting a widening consensus that the best forms of agricultural investment do not involve acquiring land, but rather working with producers on their own land, concentrating on improving productivity and deriving profit instead from processing and marketing.
We are living in a world of increasingly scarce land, water and natural resources. It also a world in which factors influencing access to land are increasingly interconnected at the global level, with increasing concentrations of both land and power. Opening up space for all who have a stake to influence decisions on how their land and natural resources are used, whether at local, national or global levels is an important task in the struggle for peace, food security and equity.

[8] IAASTD (International Assessment of Agricultural Knowledge, Science and Technology for Development), (2009), *"Agriculture at a Crossroads. Synthesis Report"*, Washington DC. Available at: http://apps.unep.org/publications/pmtdocuments/-Agriculture%20at%20a%20crossroads%20-%20Synthesis%20report-2009Agriculture_at_Crossroads_Synthesis_Report.pdf.

Land Tenure and Governance

Anni Arial[1]

> *'The eradication of hunger and poverty, and the sustainable use of the environment, depend in large measure on how people, communities and others gain access to land, fisheries and forests. The livelihoods of many, particularly the rural poor, are based on secure and equitable access to and control over these resources. They are the source of food and shelter; the basis for social, cultural and religious practices; and a central factor in economic growth.'*
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> Preface to the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. (FAO&CFS, 2012)

This excerpt to the preface of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests (Guidelines), a first international policy instrument on tenure, demonstrates the key role played by tenure and its governance for food security, sustainable development and enhancement of the environment. This chapter first introduces governance of tenure as understood by the Guidelines and then presents the Guidelines as an international non-binding instrument. The text is a brief overview only and should be complemented by other available information on the Guidelines[2] and by more critical academic literature on the governance of tenure.

1. FROM TENURE TO GOVERNANCE OF TENURE

Land and other natural resources are often the most important resources people have. In addition of being economic assets that contribute to enhancing livelihoods, land and other natural resources are entwined to the identities, histories and culture of people and communities[3]. Land questions also bring together a range of actors with a variety of interests and motivations. These elements partly explain why questions of land are very sensitive and political requiring negotiations at various levels and platforms[4].

The relations people establish between themselves in regards to access to, control over and management of land and other natural resources define the characteristics of tenure systems. These relations can be defined by rules, regulations, social and cultural codes, and religious norms and values. Tenure

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[2] See for example: Arial Anni. (2014). Reaching consensus on the governance of tenure. Development of the Voluntary Guidelines as seen by stakeholders. *Land Tenure Working Paper* 25. FAO. Rome; Arial Anni, Palmer David et al. (2012). Governance of tenure. Making it happen, in *Land Tenure Journal*, 1/2012. FAO. Rome; Munro-Faure Paul & Palmer David. (2012). An overview of the Voluntary Guidelines on the governance of tenure, in *Land Tenure Journal*, 1/2012. FAO. Rome.

[3] Palmer David et al. (2009). *Towards improved land governance*. Land Tenure Working Paper 11. FAO and UN-HABITAT. Rome and Nairobi.

[4] ibid.

systems thus vary from one social and political context to another, and multiple systems can go exist. They can be considered as institutions that are statutory or customary in nature[5].

Considering the multitude of existing tenure system, the following questions may help in understanding some of their specificities:

- How people get access to natural resources?
- Who can use what resources?
- For how long time and under what conditions people can use these resources?
- What are the sources of legitimacy of tenure rights?
- Are tenure systems based on written policies and laws or unwritten social customs and practices?

Under each tenure system, people have rights and duties in relation to natural resources. It is common to talk about these rights in terms of bundles where people can have one, a couple, or all of these rights[6]. Rights can include the ability to *i)* access to resources; *ii)* use and benefit from resources, *iii)* exclude other people from accessing and using the same resource, *iv)* transfer rights to resources to other people, and *v)* manage resources.

These rights can be set in time and multiple rights can be held by different people to the same area of land. For instance a family can be given a right to use and benefit from forest resources for a set number of years, while another family holds the forest as a private property with management and alienation rights. Rights are neither absolute. In fact, the Voluntary Guidelines stipulate that tenure rights, including private ownership, can be limited by the rights of others and by the measures taken by states necessary for public purposes such as environmental management[7]. The Voluntary Guidelines also highlight that tenure rights are balanced by duties to respect the long-term protection and sustainable use of land, fisheries and forests.

Being socially constructed, tenure systems often reflect the power relations within a given society where the most vulnerable tend to have less rights. The sources of legitimacy also vary between legal, social and informal sources[8].

When talking about the governance of tenure (or land governance), Palmer et al (2009)[9] make reference to the way in which decision are taken, enforced and monitored in regards to access to, control over, and management of natural

[5] ibid.

[6] See for instance the work of Rights and Resources Initiative: www.rightsandresources.org/resources/tenure-data/unpacking-the-bundle.

[7] FAO&CFS. 2012. Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security. Rome. Available at: http://www.fao.org/docrep/016/i2801e/i2801e.pdf.

[8] Palmer David et al. (2009). *Towards improved land governance*. Land Tenure Working Paper 11. FAO and UN-HABITAT. Rome and Nairobi.

[9] ibid.

resources. This includes considering how competing priorities and interests of people are resolved. Under this definition governance is seen as a process. Attention is also placed on interaction between actors (dialogue, negotiation, conflict etc.) and on institutions (rules and structures that govern and mediate relationships).

Governance of tenure further entails that inherent power relations to tenure systems need to be addressed and questioned. Palmer et al. (2009) highlight that it is thus important to know who has influence over decisions on tenure, who benefits from a given situation and in which way to be able to seek remedy and render responsible parties accountable to citizens. It is the quality of outcomes and the impact on the most vulnerable actors that count.

Palmer et al. (2009) remind that the governance of tenure systems is not only the responsibility of states and its entities, such as courts and administration, but also of the society at large. For instance customary authorities, the private and professional sectors, and the civil society also play a role. These actors are more and more engaged in taking and implementing decisions as well as solving grievances.

If effective, the responsible governance of tenure can secure livelihoods, offer equal opportunities for development and enhance the security of tenure. Governance of tenure thus becomes key for improving food security that depends in part of the sustainable access to resources that are used for food production.

2. CHALLENGES OF GOVERNANCE OF TENURE

Challenges of governance of tenure persist around the world and concern as much statutory as well as customary systems. A weak governance often affects the most vulnerable people because they lack the force to influence decisions, claim and protect their tenure rights or gain voice.

Many governance challenges have escalated because of increased pressure over natural resources and the close of the land frontier. This can be, for instance, a result of population growth (e.g. around urban areas), migration and displacements all modifying conditions for livelihoods and settlements, and requiring renegotiating the rules of tenure. Since a couple of years increased attention is paid to large scale agricultural investments, forest management and biodiversity conservation as well as their effects on the tenure rights of people.

Governance challenges can also relate to the functioning of tenure systems and administrations, stem from the way in which different approaches and technologies are used to govern resources, and appear as a response to inadequate implementation and enforcement of policies and laws. One of the main governance issues is the persistence of corruption in both statutory and customary systems. Corruption can vary from small-scale bribes and fraud (e.g. administrative corruption) to high-level abuse of government power and

political positions. In all cases its prevalence is linked to and facilitated by the processes and institutions in which it occurs.

Corruption in land administration has been measured by the Global Corruption Barometer of Transparency International
• Global Corruption Barometer of 2009 showed that land administration is one of the most corrupted public sectors in the world. A study in one low income country for example revealed that US$ 700 million worth of bribes are paid annually by users of the country's land administration services.
• The GCB stated that 15% of people being in connection with land services reported paying a bribe.
• 34% of people interviewed, considered the problem of corruption in land authorities to be very serious.

Source: http://www.transparency.org/whatwedo/publication/global_corruption_barometer_20091

Many of these governance challenges are complex and politically sensitive. They also have global dimensions and similarities exist between countries. These factors have in part motivated the development of global guidelines on the responsible governance of tenure that establish a common set of principles on which states and other actors can rely on.

3. VOLUNTARY GUIDELINES ON THE RESPONSIBLE GOVERNANCE OF TENURE

The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security are the greatest common ground achieved in international arena on tenure. They were developed through a participatory and inclusive process that started in mid-2000 with the elaboration of the concept, continued in 2009/2010 with 15 consultation meetings around the world, and concluded with intergovernmental negotiations in 2011/2012. The Guidelines were endorsed by the Committee on World Food Security (CFS) in May 2012. In total, the process brought together more than 1000 people in the consultation phase and some 98 countries during the negotiations.

The development process of the Guidelines did not only bring together governments but also civil society, academia, international organizations, professional bodies and the private sector played a role. The Guidelines are thus a consensus document resulting from long negotiations and dialogue between these players. The Guidelines are also one of the first international documents negotiated under a body of the United Nations that have opened the negotiations for non-state actors. Indeed, one of the characteristics of the CFS is the inclusion of civil society, international organizations and the private sector as participants to the negotiations. They were able to share their opinions and propose content while the actual decision-making was reserved for member states.

For many actors involved, the development of the Guidelines offered an opportunity to engage in a policy dialogue on tenure sharing their experiences and point of views. For others, it represented a continuation to previously developed instruments or policy dialogues such as the Voluntary Guidelines on the Right to Food[10] or the International Conference on Agrarian Reform and Rural Development[11].

The Guidelines set reference points and standards on responsible governance of tenure. States can refer to this framework when developing their own strategies, policies, legislation, programs and activities[12]. The Guidelines can thus provide inspiration and give indication on internationally accepted best practices. This is useful, for instance, for judging whether some proposed actions constitute acceptable practices[13].

The Guidelines are voluntary and do not as such establish legally binding obligations; replace existing national or international laws, commitments, treaties or agreements; nor do they prejudice the rights, jurisdictions and duties of governments. Questions are often raised in regards to this voluntary nature of the Guidelines and its added value in comparison to binding instruments. Munro-Faure and Palmer (2012) explain that is often easier for actors to reach agreements on voluntary instruments which enable them to be more comprehensive and more closely suited for technical matters. Furthermore, they note that the Food and Agriculture Organization of the United Nations (FAO), which initiated and coordinated the initiative, has had positive experiences with similar Guidelines and their impact on guiding national policies and laws in many countries.

While the Guidelines are voluntary, a number of its elements are based on relevant rules of international legally binding agreements. Similarly, if a country integrates the principles of the Guidelines in its legislation, these principles become binding in that country.

3.1 *Scope of the Guidelines*

The Guidelines apply to land, fisheries and forests considering the specificities of each resource but also their interdependencies. Indeed, the livelihoods of people are diversified and dependent on access to various natural resources[14]. People also combine activities, for instance, crop agriculture and

[10] For more information on the Right to Food Guidelines please see: www.fao.org/righttofood/right-to-food-home/en.

[11] Arial Anni. 2014. *Reaching consensus on the governance of tenure. Development of the Voluntary Guidelines as seen by stakeholders*. Land Tenure Working Paper 25. FAO. Rome.

[12] Munro-Faure Paul & Palmer David. 2012. An overview of the Voluntary Guidelines on the governance of tenure. In *Land Tenure Journal*, 1/2012. FAO. Rome.

[13] ibid.

[14] Palmer David, Arial Anni et al. 2012. Improving the governance of tenure of land, fisheries and forests, in *Land Tenure Journal*, 1/2012. FAO. Rome.

livestock grazing with fishing and gathering of forest products. However, the development of one resource can endanger another one[15]. For instance, the extension of agricultural land can put in danger forested areas. There is thus need to consider the interaction between different land uses and apply a more landscape focused approach. The Guidelines do not explicitly address water or mineral but actors can apply the principles to these resources as well if they wish to do so.

The Guidelines apply to all types of tenure (statutory and customary; private, state and communal holding/ownership) and aim to act for the benefit of all people. An emphasis is placed on the most vulnerable and a set of safeguards are put forward.

One of the key notions of the Guidelines is legitimate tenure rights that refer to rights that are not only recognized by formal law but also by the society at large. These rights are often inscribed in historic processes and in the context of the Guidelines it is for each society to define what constitute a legitimate right. Munro-Faure and Palmer (2012) note that responsible governance of tenure would further require that formal recognition is given to all tenure rights that are considered legitimate by society[16]. This is to ensure that people are not excluded from participating in formal processes and to protect them from eviction and exclusion.

While the Guidelines are global in scope, they are applied in relation to existing national laws and frameworks. It is thus the responsibility of each country to assess the situation of governance of tenure and seek suitable responses from the Guidelines.

3.2 *Contents of the Guidelines*

In the beginning of the Guidelines, two sets of principles (general and implementation) are identified that further guide all action.

The General principles of the Guidelines are:

- **Recognize and respect all legitimate tenure right holders and their rights**. States should take reasonable measures to identify, record and respect legitimate tenure right holders and their rights, whether formally recorded or not; to refrain from infringement of tenure rights of others; and to meet the duties associated with tenure rights.
- **Safeguard legitimate tenure rights against threats and infringements**. States should protect tenure right holders against arbitrary loss of their tenure rights, including forced evictions that are inconsistent with their existing obligations under national and international law.

[15] Palmer David, Arial Anni et al. 2012. Improving the governance of tenure of land, fisheries and forests, in *Land Tenure Journal*, 1/2012. FAO. Rome.

[16] Munro-Faure Paul & Palmer David. 2012. An overview of the Voluntary Guidelines on the governance of tenure. In *Land Tenure Journal*, 1/2012. FAO. Rome.

- **Promote and facilitate the enjoyment of legitimate tenure rights**. States should take active measures to promote and facilitate the full realization of tenure rights or the making of transactions with the rights, such as ensuring that services are accessible to all.
- **Provide access to justice to deal with infringements of legitimate tenure rights.** States should provide effective and accessible means to everyone, through judicial authorities or other approaches, to resolve disputes over tenure rights; and to provide affordable and prompt enforcement of outcomes. States should provide prompt, just compensation where tenure rights are taken for public purposes.
- **Prevent tenure disputes, violent conflicts and corruption**. States should take active measures to prevent tenure disputes from arising and from escalating into violent conflicts. They should endeavour to prevent corruption in all forms, at all levels, and in all settings.

The Principles of implementation as defined in the Voluntary Guidelines are:
- **Human dignity**: Recognizing the inherent dignity and the equal and inalienable human rights of all individuals.
- **Non-discrimination**: No one should be subject to discrimination under law and policies as well as in practice.
- **Equity and justice**: Recognizing that equality between individuals may require acknowledging differences between individuals, and taking positive action, including empowerment, in order to promote equitable tenure rights and access to land, fisheries and forests for all, women and men, youth and vulnerable and traditionally marginalized people, within the national context.
- **Gender equality**: Ensure the equal right of women and men to the enjoyment of all human rights, while acknowledging differences between women and men and taking specific measures aimed at accelerating de facto equality when necessary. States should ensure that women and girls have equal tenure rights and access to land, fisheries and forests independent of their civil and marital status.
- **Holistic and sustainable approach**: Recognizing that natural resources and their uses are interconnected, and adopting an integrated and sustainable approach to their administration.
- **Consultation and participation**: Engaging with and seeking the support of those who, having legitimate tenure rights, could be affected by decisions, prior to decisions being taken, and responding to their contributions; taking into consideration existing power imbalances between different parties and ensuring active, free, effective, meaningful and informed participation of individuals and groups in associated decision-making processes.
- **Rule of law**: Adopting a rules-based approach through laws that are widely publicized in applicable languages, applicable to all, equally enforced and independently adjudicated, and that are consistent with their existing obligations under national and international law, and with due regard to voluntary commitments under applicable regional and international instruments.

- **Transparency**: Clearly defining and widely publicizing policies, laws and procedures in applicable languages, and widely publicizing decisions in applicable languages and in formats accessible to all.
- **Accountability**: Holding individuals, public agencies and non-state actors responsible for their actions and decisions according to the principles of the rule of law.
- **Continuous improvement**: States should improve mechanisms for monitoring and analysis of governance of tenure in order to develop evidence-based programs and secure on-going improvements.

The Guidelines are further divided in parts and sections giving a comprehensive overview of the main issues related to the governance of tenure. In particular, the structure is organized as follows:

1. ***Preliminary***
   - Objectives
   - Nature and scope
2. ***General matters***
   - Guiding principles of responsible governance of tenure
   - Rights and responsibilities related to tenure
   - Policy, legal and organizational frameworks related to tenure
   - Delivery of services
3. ***Legal recognition and allocation of tenure rights and duties***
   - Safeguards
   - Public land, fisheries and forests
   - Indigenous peoples and other communities with customary tenure systems
   - Informal tenure
4. ***Transfer of tenure rights***
   - Markets
   - Investments
   - Land consolidation and other readjustment approaches
   - Restitution
   - Redistributive reforms
   - Expropriation and compensation
5. ***Administration of tenure***
   - Records of tenure rights
   - Valuation
   - Taxation
   - Regulated spatial planning
   - Resolution of disputes over tenure rights
   - Transboundary matters
6. ***Response to climate change and emergencies***
   - Climate change
   - Natural disasters
   - Conflicts in respect to tenure of land, fisheries and forests
7. ***Promotion, implementation, monitoring and evaluation***

4. APPLICATION OF THE GUIDELINES

Since their endorsement by the CFS in 2012, the Guidelines have received international recognition and attention. A number of countries, international organizations, civil society organizations, professional bodies and technical cooperation agencies are engaged in operating in line with the Guidelines. The participatory and inclusive development process has also offered a favorable stepping stone for moving from principles to action. However, the real value of an international framework such as the Guidelines is measured by changes in practice.

The Guidelines stipulate that states have the responsibility for their implementation, and monitoring and evaluation. They are encouraged to set up multi-stakeholder platforms and frameworks at local, national and regional levels or use such existing platforms and frameworks to collaborate on the implementation of the Guidelines. These processes should be inclusive, participatory, gender sensitive, implementable, cost effective and sustainable. Further support can be sought from development partners. Finally, all parties are encouraged to collaborate in promoting and implementing the principles and practices, and to disseminate information on responsible governance of tenure.

5. CONCLUSION

At best, the Guidelines can become a ubiquitous feature in the land, fisheries and forest sectors providing elements to national policies and laws; informing technical actions; and setting references for the recognition, protection and safeguard of legitimate tenure rights of people[17]. They can offer a setting for continuous dialogue and sharing of best practices between players. However, for the Guidelines to make a real difference, a commitment of all targeted stakeholders is needed for the governance of tenure and for common action.

[17] Arial Anni. 2014. *Reaching consensus on the governance of tenure. Development of the Voluntary Guidelines as seen by stakeholders*. Land Tenure Working Paper 25. FAO. Rome.

Women, food security and access to land

Simona Beretta[1]

This chapter focusses on the role of women in agriculture and food production and distribution, with a view to highlight discrimination, gender biases and gender inequality that unfortunately continue to make women's life harder, and to hinder development – both their personal development, and society's development at large.

Women are indeed at the core of development. Their economic contribution to development is enormous, within formal and informal markets and also within households – that truly become homes mostly thanks to unpaid, and often unappreciated, women's work. But women's contribution to development goes well beyond the material economic dimension, if we consider the elemental fact of childbearing and generation. Women "bear the future" – in their wombs and way beyond, caring for children and feeding them with all is needed for children to fully develop into educated, healthy and creative adults. Women deliver both material and symbolic "food" – as human beings need much more than a bunch of calories to develop to their full accomplishment. This is what generation is about: generation, as distinct from reproduction, implies taking care of specific relationships, i.e. investing in a network of relations; this investment, in turn, produces valuable material and symbolic social capital, allowing communities to flourish and sustainable development to materialize.

Separating economic development form a well-rounded notion development is a dangerous shortcut, as even economic development, in order to be truly sustainable, needs to be founded upon crucial non-material assets such as motivations, aspirations and beliefs that make it possible for each person, and for communities, to move ahead. The economy can use these assets, but cannot produce them by some merely technocratic process. In words that were written many decades ago, "We cannot allow economics to be separated from human realities, nor development from the civilization in which it takes place. What counts for us is man—each individual man, each human group, and humanity as a whole"[2]. Political correctness was not the hype of those times, so the reference to "man" need to be correctly understood as referring to each and every person; indeed, each person's agency drives sustainable development. Persons drive development, but not in isolation: their agency occurs (or may be hindered) within all the meaningful relationships that characterize each person's life: from very near (family, neighborhood, farm, local communities), to broader economic, political, social and cultural environment.

Data for assessing women's situation and women's agency for food security and development are widely available; yet, the empirical evidence on women's

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[2] L.J. Lebret, O.P., *Dynamique concrète du développement*, Paris: Economie et Humanisme, Les editions ouvrierès (1961), p. 28, as quoted in Paul VI, *Populorum progressio*, 1967, n. 14.

situation is characterized by the overwhelming prevalence of data which refer to women as individuals, technically defined "attributional" data; while "relational" date, measuring women's roles and positions within their living environment and their formal and informal networks, are very rare – virtually non-existent. Attributional data are obviously simpler to collect, and they tend to prevail also in other fields of economics, but there is a growing body of literature and empirical evidence based on the idea that relational data are indispensable for understanding a wide variety of economic issues, from firms' location and innovation processes[3], to international economic integration[4].
Attributional data about the economic position of women offer very valuable information, but we should ignore their structural limitations. Empirical findings refer to either women as individual agents, or as a collectivity – an aggregation of individuals with common characteristics; they provide many insights, but they also open new questions about the situation of women in the economy and in society that attributional data alone cannot answer. This is especially true for personally sensitive issues that women face, in different ways, at all latitudes: the family, the neighborhood and the broader socio-political relations that a women experiences make all the difference for her personal well-being, for food security, for social capital, and for overall societal development.

1. FOOD SECURITY: WOMEN IN AGRICULTURE, FOOD PROCESSING AND HOUSEHOLD CARE

Women are fundamental for food security, especially where access to adequate food is problematic. They play a crucial role in agricultural production, transformation and conservation; in food processing and food accessibility – both within the household and in local markets.
However, accurately quantifying women's role in agriculture and food production is not easy. More than 90% of farms are run by an individual or a family and rely primarily on family labour; out of the 2.5 billion people in poor countries living directly from the food and agriculture sector, 1.5 billion people live in smallholder households – defined as working on up to 10 hectares. As 72% of all farms are smaller than one hectare, many of which are extremely poor; for example, 57% of Rwanda's farms and 47% of India's farms cover less than half a hectare. Yet, family farms produce about 80% of the world's food[5]. As women and men often collaborate in the family farming process, it is

[3] See Maggioni, M.A. 2004. "The Dynamics of Open Source Software Communities and Industrial Districts: the Role of Market and Non-Market Interactions." Revue d'Économie Industrielle 107:127-150; Maggioni, M.A. Breschi S, Panzarasa P. 2013. "Multiplexity, growth mechanisms and structural variety in scientific collaboration networks." *Industry and Innovation* 20: 185-194.

[4] In international trade, for example, analysing who trades what with whom (relational data) provides deeper understanding than just trade levels of one country (attributional data). International supply-chains analysis (productive integration) obviously requires relational data. Serrano, A. and M. Boguña (2003), Topology of the World Trade Web, *Physical Review E*, 68: 015101(R); Serrano, A., M. Boguña and A. Vespignani (2007), Patterns of dominant flows in the world trade web, *Journal of Economic Interaction and Coordination*, 2: 111-124; C.A. Hidalgo, B. Klinger, A.-L. Barabási, R. Hausmann, The Product Space conditions the Development of Nations, Science, vol. 317, 482 (2007).

[5] http://www.fao.org/assets/infographics/FAO-Infographic-IYFF14-FamilyFarms-en.pdf.

practically impossible to disentangle who is providing labour and other inputs, and how much production can be attributed to women.

Women are the world's primary food producers, yet cultural traditions and social structures are such that women tend to be less empowered and more affected by hunger and poverty than men[6]. A mother who is stunted or underweight due to an inadequate diet often give birth to low birth-weight children; All too often, child hunger is inherited: up to 17 million children are born underweight annually, the result of inadequate nutrition before and during pregnancy (https://www.wfp.org/hunger/who-are).

On the basis on extensive research, the 2011 FAO report on The State of Food and Agriculture, devoted to Women in agriculture: Closing the gender gap for development refers to important background information and clearly affirms that women make essential contributions to agriculture and rural enterprises across the developing world; however, the situation is quite articulated across macro regions, and also quite fluid over time. On average, women form the 43% of total agricultural labour force, with percentages that range from 20% in Latin America to over 50% in Eastern Asia and sub-Saharan Africa.

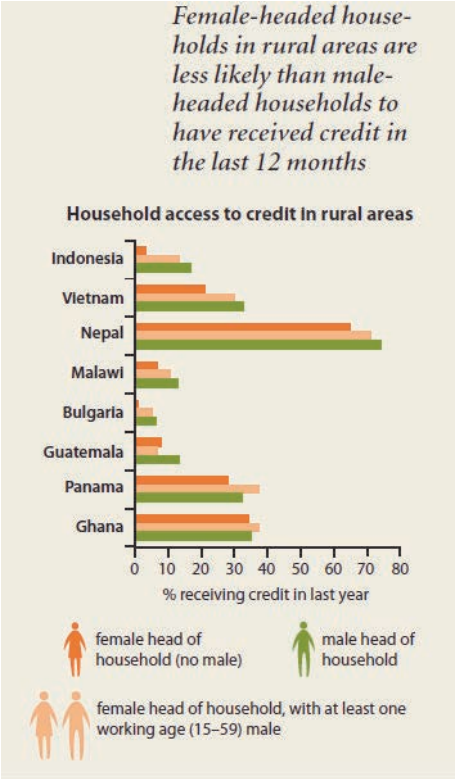
Global figures masks considerable variation across regions and within countries according to age and social class. Different production structures tend to be associated to different patterns of female labour. Women are especially concentrated in small, subsistence farming activities, primarily meant for household consumption, and only occasionally sold into markets; male presence is relatively stronger in the formal agricultural labour market, especially for cash crops production. As there is the tendency to estimate agricultural production and work on the basis of market exchanges – for their obviously easier measurability with respect to self-subsistence production – it is quite likely that women's role in agricultural and food production is in fact underestimated[7]. As there is much diversity in women's roles across regions and across sectors, generalization can be dangerous and policies must be tailored on specific situations, and based on sound data.

«A precise measure of women's contribution to food production is impossible to establish. In general women do not produce food separately from men and it is impossible to disaggregate men and women's contributions either in terms of labor supplied or in terms of output produced. Ultimately the precise contribution women make to food production is irrelevant. There is evidence that shows that women farm as productively as men do, when they have access to the same resources»[8].

[6] https://www.wfp.org/hunger/who-are; see also M. Van den Bold, A. Quisumbing and S. Gillespie, *Women's empowerment and nutrition*. IFPRI Discussion Paper No. 01294, International Food Policy Research Institute, Washington, DC, September 2013.

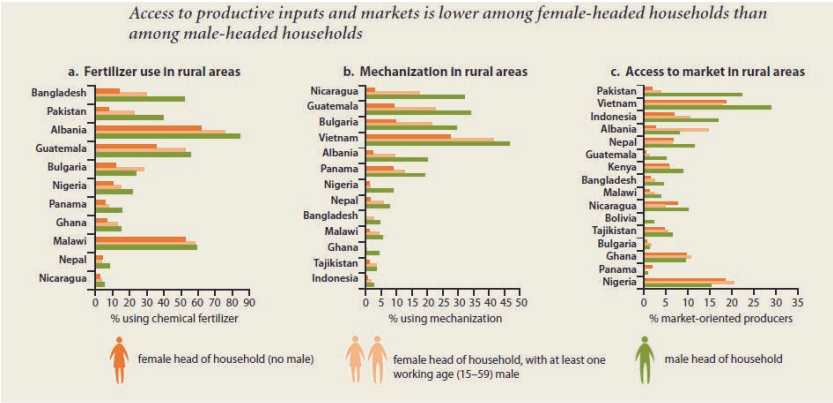
[7] FAO, *The State of Food and Agriculture 2010-11: Women in agriculture: Closing the gender gap for development,* Rome, 2011, http://www.fao.org/docrep/013/i2050e/i2050e00.htm.

[8] Cheryl Doss, If women hold up half the sky, how much of the world's food do they produce?, November 2010, Yale University, http://www.fao.org/3/a-am309e.pdf.



Source: World Bank/Food and Agriculture Organization database, most recent year available.

World Bank, World Development Report – Gender Equality and Development, 2012, p. 227, https://siteresources.worldbank.org/INTWDR2012/Resources/7778105-1299699968583/7786210-1315936222006/Complete-Report.pdf



Source: World Bank/Food and Agriculture Organization database, most recent year available.

World Bank, World Development Report – Gender Equality and Development, 2012, p. 228, https://siteresources.worldbank.org/INTWDR2012/Resources/7778105-1299699968583/7786210-1315936222006/Complete-Report.pdf

Overall, the labour burden of rural women exceeds that of men, as it usually includes unpaid household work related to preparing food and collecting fuel and water. The table below vividly represents how heavy is the daily burden on the shoulders of the most vulnerable: women and children, for accessing basic elements for food security, in some of the poorest rural communities in the world. Clean water and non-toxic energy sources are in facts essential for households' access to safe food, which minimizes health risks –food safety is indeed a conspicuous dimension of food security.

«Benefits of women's participation in agricultural value chains are determined by their control of productive resources and household level decisions. Where both sexes play a role in decision making generic interventions, or even those applied to men only, can benefit both sexes. Where women do not participate in spending decisions, a more gender-specific approach that targets underlying gender issues in households and institutions is required»[9]. This remark is quite important and has no easy, extrinsic solution, as it impinges in very profound issues of what women's dignity is, and as a consequence how women's agency can be promoted.

Average hours per week spent fetching wood and water in rural areas of selected Sub-Saharan African countries

	Guinea (2002-03)	Madagascar (2001)	Malawi (2004)	Sierra Leone (2003-04)
women	5.7	4.7	9.1	7.3
men	2.3	4.1	1.1	4.5
girls	4.1	5.1	4.3	7.7
boys	4.0	4.7	1.4	7.1

Rural Women and the Millennium Development Goals (Source: UNDP, 2011)
http://www.un.org/womenwatch/feature/ruralwomen/documents/En-Rural-Women-MDGs-web.pdf

Considering overall evidence on women's role in agriculture, it is safe to conclude that the potential of women's contribution to food security is not sufficiently appreciated.

Undervaluation of women's role tends to consistently prevail across countries, types of crops, sectors and regions. In general, women face important constraints that reduce their productivity. Despite the fact that women's participation in rural labour markets varies considerably across regions, women invariably tend to be over-represented in unpaid, seasonal and part-time work; moreover, the

[9] Coles C. and Mitchell J., *Gender and agricultural value chains – a review of current knowledge and practice and their policy implications*, ESA Working Paper No. 11-05, March 2011, http://www.fao.org/docrep/013/am310e/am310e00.pdf.

available evidence suggests that women are normally paid less than men for the same work[10].

They tend to have less access than men to productive resources, in particular land and other such as livestock, financial services, modern inputs such as fertilizers and mechanization, information and extension services[11]. In general, it is quite common that women farmer have access to less fertile land, with less access to water, more vulnerable to environmental and climate risks. In other words, access to food for the poorest households – often headed by women – depends on low yield, high risk agricultural production; hence, their life is food insecure, and the poverty trap is practically unavoidable. Gender gaps in access to resources and opportunities are heavily interconnected: for example, when female farmers have lower levels of technology his is not due to their sex, but to their having less access to land, less access to labour and less access to extension services. One crucial gender gap in agriculture relates to women's access to financial services, as shown below. Moreover, despite the diffusion of specific credit programmes explicitly targeted on women, one should notice that informal institutions and culture may erode women's control over the use of financial resources within the household, even when they are the formal recipients of credit.

The 2011 FAO Report concluded, as a key message, that closing the gender gap in agriculture could generate significant gains for agriculture and for society. If women farmers had the same access to productive resources as men, their output could increase by 20-30%, raising agricultural output by 2.5 to 4% thus contributing to reduce the number of hungry people by 12 to 17%. More recently, the message has been restated in the preparation to post-2015 SDGs: "Should women farmers have the same access to productive resources as men, they could increase yields on their farms by 20-30 percent, lifting 100-150 million people out of hunger. Women are the quiet drivers of change towards more sustainable production systems and a more varied and healthier diet"[12].

2. RURAL WOMEN'S (OFTEN NEGLECTED) RIGHTS: ACCESS TO LAND

Women are often discriminated both within the family and in society. Within the family, they usually have a lower control on how to use the household's income, despite the fact that they may have directly contributed to generating it. Women and girls are often discriminated in access to food, and are more exposed to health risks especially during child-bearing and in the lactating period. In the social and economic environment, women face reduced access to productive resources, services and opportunities.

[10] FAO, *The Role of Women in Agriculture*, Prepared by the SOFA Team and Cheryl Doss, March 2011 http://www.fao.org/docrep/013/am307e/am307e00.pdf.

[11] Extension services encompass a wide range of services from communication to education activities provided by experts in the areas of agriculture, agribusiness, health and others; they can be quite effective in improving productivity and overall wellbeing of rural populations. See *Gender differences in assets,* Prepared by the SOFA Team, February 2011, http://www.fao.org/3/a-am317e.pdf.

[12] http://www.fao.org/fileadmin/templates/nr/sustainability_pathways/docs/Factsheet_SMALLHOLDERS.pdf.

Women's access to land is particularly problematic: often, they can access land only through their husband or other male relative (father, brother, uncle). Traditions concerning bequests, in particular, often include the transmission of land along a male line, from father to son. Widowed women and daughters must then depend on the benevolence of male heirs in order not to be dispossessed of their home and of the land they had been cultivating in the previous years. In some cases, their ability not to be dispossessed may depend upon their availability to be themselves "inherited" by the male members of the family who inherited the land. Informal, conventional traditions may also imply that, whenever a woman should be entitled to possess land, the husband, or of another male member of the family in an authoritative position, would be expected to keep effective control over the use of that land.

In some cases, law or prevailing customary law may explicitly limit access to land for women – in particular, they would not be entitled to inherit land. Most national legislations have been reformed in the direction of more equal rights for man and women, up to inclusion of the principle of equal opportunities in Constitutional Charters; however, traditions, practices and informal institutions relating to land access and land use tend to change only very slowly.

Gender issues in access to land have come to the attention of the international community only slowly, along with a maturing vision of development that progressively took distance from simplified perspectives, based on the supposedly automatic effects of technological and economic interventions – effects that did not materialise in terms of reduced poverty and enhanced opportunities for the poor to be protagonists of their own development.

A quick survey of international document related to access to food and access to land shows successive crucial openings, that in this text have been highlighted in bold characters.

The *International Covenant on Economic, Social and Cultural Rights*, approved 16 December 1966, entered into force 3 January 1976 states: *"... 2. The States Parties to the present Covenant, recognizing the* ***fundamental right of everyone to be free from hunger****, shall take, individually and through international co-operation, the measures, including specific programmes, which are needed: (a) To* ***improve methods of production,*** *conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or* ***reforming agrarian systems*** *in such a way as to achieve the* ***most efficient development and utilization of natural resources****; (b) Taking into account the problems of both food-importing and food-exporting countries, to ensure an* ***equitable distribution of world food supplies*** *in relation to need."*

This 1966 text is clear in stating the target (a world "free from hunger", which unfortunately remains a target even for the post-2015 agenda), and also in identifyiong the instruments: better productive and nutritional technology, and an effciency-oriented agrarian reform. Equitable distribution of food supply is all that seems to matter – an idea which clearly resonate with the policy approach prevailing at the time, separating efficiency issues from justice issues: in a rough representation, first get the cake as big as you can, than slice it in a more equitable way. Pursuing economies of scale in agricultural production, for example, would be a typical implementation of the principle of efficiency in isolation, not explicitly connecting it to justice considerations, and possibly

practically condradicting it. Unfortunately, this approach does not belong to the past, as large scale land acquisitions and land conflicts have been on the rise in the recent past, at times with heavy negative economic, social an political consequences on the local population.

Some decades later, the *Committee on Economic, Social and Cultural Rights*, General Comment 12, Right to adequate food (Twentieth session, 1999), U.N. Doc. E/C.12/1999/5 (1999) would come back to the issue of the right to food and introduce a new prespective, highlighting the importance of equitable distrbution of resources for achiving equitable outxcomes in terms of access to food. *"**...** 26. The [national] strategy should give particular attention to the need to prevent discrimination in access to food or resources for food. This should include: guarantees of **full and equal access to economic resources, particularly for women**, including the right to inheritance and the ownership of land and other property, credit, natural resources and appropriate technology; measures to respect and protect self-employment and work which provides a remuneration ensuring a decent living for wage earners and their families (...); **maintaining registries of rights** in land (including forests)."*

More recently, the *Voluntary Guidelines on the Right to Food* adopted by the Council of the FAO in 2004 elaborate on the issue as follows: *"... 8.10 States should take measures to promote and protect the security of **land tenure**, especially with respect to **women, and poor and disadvantaged segments of society**, through **legislation** that protects the full and equal right to own land and other property, including the right to inherit. As appropriate, States should consider establishing **legal and other policy mechanisms**, consistent with their international human rights obligations and in accordance with the rule of law, that **advance land reform to enhance access for the poor and women**. Such mechanisms should also promote conservation and sustainable use of land. Special consideration should be given to the situation of **indigenous communities**."*

In 2012, the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*[13] also propted the publication of *A technical guide to support the achievement of responsible gender-equitable governance of land tenure*[14]. Gender equality is one of the ten core principles for implementation of the Guidelines and is closely tied to three others – human dignity, nondiscrimination, and equity and justice.

The Guidelines' principles of implementation relevant to gender equity and equality, as summarized in the Technical guide, are: *"3.B.1 Human dignity: recognizing the **inherent dignity** and the equal and inalienable human rights of all individuals. 3.B.2 **Non-discrimination**: no one should be subject to discrimination under law and policies as well as in practice. 3.B.3 **Equity and justice**: recognizing that equality between individuals may require acknowledging differences between individuals, and taking positive action, including empowerment, in order to promote equitable tenure rights and access to land, fisheries and forests, for all women and men, youth and*

[13] http://www.fao.org/docrep/016/i2801e/i2801e.pdf.
[14] http://www.fao.org/docrep/017/i3114e/i3114e.pdf.

vulnerable and traditionally marginalized people, within the national context. 3.B.4 ***Gender equality****: Ensure the equal right of women and men to the enjoyment of all human rights, while acknowledging differences between women and men and taking specific measures aimed at accelerating* ***de facto equality*** *where necessary. States should ensure that women and girls have equal tenure rights and access to land, fisheries and forests, independent of their civil and marital status*"[15].

Moreover, the Technical guide summarizes the parts of the 1979 *Convention on the Elimination of all Forms of Discrimination against Women* (CEDAW) which relate to land tenure (articles from 13 to 16): "*Articles 13 to 15: Women to have equal rights with men to* ***conclude contracts*** *and in the administration of property, including equal access to mortgages and equality in procedures before courts and tribunals, with restrictions to the legal capacity of women deemed to be null and void. Article 14: Women to receive equal treatment in* ***land and agrarian reforms****, and in land resettlement schemes and housing. Article 16: Women to have the* ***same rights in marriage*** *as their spouses with respect to ownership, management, enjoyment and disposal of property, including on divorce*"[16].

Despite pregress in understanding and stating women's rights in access to land, the road to go is very long, and it begins with appropriate information on the legal and actual status of women especially in low income contries, where de facto equality remains a huge problem. The *FAO Gender and Land Rights* website[17] is a very valuable resource for accessing a vast database including information on a variety of items, summarized in the table below, that can help disentangling the interaction between formal legislation, traditional law, local cultures and practices.

It provides detailed country data on six categories:

- national legal framework, including gender and land rights entrenched in the Constitution, women's property and use rights in personal law, inheritance legal mechanisms, land legislation, policies and institutional mechanisms enforcing or preventing women's land rights;
- international treaties and conventions
- customary law
- land tenure and related institutions
- civil society organizations
- selected land-related statistics.

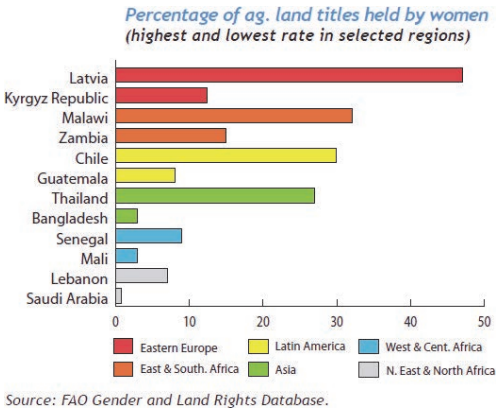
The website also includes an interactive map on women's access to land: http://www.fao.org/economic/es-policybriefs/multimedia0/female-land-ownership/en/, that can be very helpful in providing information on the main features and problems of a given county's situation. The international comparison of the incidence on women's agricultural land titles shows that different regions, and different countries within the same regions, exhibit a

[15] *A technical guide to support the achievement of responsible gender-equitable governance of land tenure*, p. 3, http://www.fao.org/docrep/017/i3114e/i3114e.pdf.

[16] *A technical guide to support the achievement of responsible gender-equitable governance of land tenure*, p. 5, http://www.fao.org/docrep/017/i3114e/i3114e.pdf.

[17] www.fao.org/gender/landrights.

very differentiated pattern of female land titles; however, this information needs to be considered together with the broader country profile, especially in relation to local traditions, as the case below clarifies.



FAO, Gender and Land Rights. Understanding complexities; adjusting policies, Policy Brief, March 2010, http://www.fao.org/economic/es-policybriefs/briefs-detail/en/?no_cache=1&uid=40497

The case of Mozambique

As an example, take the case of Mozambique, a country where percapita income is around 350$, and where 36% of the population lives below the US$ 1 poverty line and 74% lives with less than 2 US$ per day (reference period: 1990 to 2005). Women live on average 43 years, and men 42; literacy rates are 54.8% for male, and 25% for female between 15 and 49 years of age. This patently problematic situation feed into the very low Mozambique's Human Development Index, ranking 175th over 179 countries in 2006.

In Mozambique, 93% of women work in agriculture, a sector which employs 80% of the total labour force; agriculture, though, only provides 23% of domestic production. That is: agricultural productivity is very low; roughly, data imply that 80% of Mozambique workers can access at best only 23% of national income. At the same time, agricultural products represent 80% of Mozambique's exports[18]. Among the rural population, 55.3% lived below the US$ 1 per day poverty line in 2003; moreover, rural communities are extremely vulnerable to natural disasters such as droughts and floods. Household farming, particularly subsistence agriculture, is traditionally a woman's job; men's roles usually are clearing the land and participate in harvesting; women's tasks include sowing, planting, weeding and irrigating. With respect to access to land, only 20% of women have more than 2 hectares and 65% of female-headed households occupy less than 1.5 hectares – compared with 47% of male-headed households; the number of women who are heads of households has increased from 23% in 1980 to 30% in 1997.

[18] http://www.fao.org/gender-landrights-database/en.

While gender equality is now embedded in most formal legislation, including the Constitution (adopted in 1975, amended and supplemented in 1990 and in 2004) and national laws, there are significant discrepancies between general legislation, customary traditions, practical arrangements and actual implementation of gender equality. The conundrum is built into the system, as Article 4 of the Constitution is about "legal pluralism": the State recognizes the different legal and conflict resolution systems that coexist in the Mozambican society, as far as they do not contravene the fundamental values and principles of the Constitution. Obviously, such contravention has to be judicially recognized, and this fact leaves many grey areas where gender-biased local institutions can *de facto* survive.

However, Article 36 of the Constitution clearly states the Principle of Gender Equality: Men and women shall be equal before the law in all spheres of political, economic, social and cultural life; and all individuals shall have the duty to respect and consider their fellow beings without any form of discrimination no discrimination (Article 44). This very comprehensive principle found application in many legislative provisions; here only two will be mentioned, the Land Act of 1997 and the Family Law of 2004, as they are especially important in relation to women's access to land.

The Land Act of 1997, and the following Regulations of 1998, introduced legal measures to help local communities, families and individuals, men and women assert their rights over land acquired by occupation or customary in good faith, even though the state retains ownership of the land. The law also invoked other forms of proof of land rights, such as oral testimony, as an alternative to written registrations and titling of land. According to the Norwegian Agency for Development Cooperation (NORAD), the law is regarded as one of the best pieces of land rights legislation in the world, for the way it "protects and codifies local people's land rights and confers powers to local participatory processes that involve both men and women"[19]. However, these rights are not enjoyed by women in practice due to a lack of knowledge of their rights and because administrative practices are not yet aligned with the law. While the law provides women equal rights to land, it also formally recognises customary systems of land tenure in which male relatives regulate women's access to land. Thus, problems associated with implementation are enormous, including (lack of) knowledge of the law by the population, poor interpretation and enforcement by the authorities and judicial and administrative officials, interference and disrespect for the law by powerful businesses.

A specific implementation issue of the Land Act, as mentioned, is the persistency of customary norms and practices that are contrary to the fundamental values of the Constitution, and at the same time part of the principle of legal pluralism. So, the majority of the population has still awaits the benefit from the 1997 Land Law. A special Strategy and Action Plan for Gender in the Agrarian Sector was also adopted in 2006, based on the National Gender Policy and Strategy

[19] Kaarhus R. with Martins S., How to Support Women's Land Rights in Mozambique? Approaches and Lessons Learnt in the Work of Four Main Organisations, NORAD Report 3/2012 Discussion, 2012, p. 9, http://www.norad.no/globalassets/import-2162015-80434-am/www.norad.no-ny/filarkiv/vedlegg-til-publikasjoner/how-to-support-womens-land-rights-in-mozambique.pdf.

of the same year. The strategy appropriately evokes access to resources, technology, financial services, marketing and markets; however, according to the FAO database the National Plan of Action is compromised by lack of financial of resources and appropriate gender training among civil servants.

Mozambique 1997 Land Law also provides statutory recognition of customary land rights, and is thus considered one of the most progressive legislations in Africa. It foresees the possibility for both man and women belonging to a local community to apply for formal registration of individual (or pluri-individual) titles of access to land; however, the registration process remains slow and costly. Implementing access to customary land requires capacity development for direct beneficiaries and for those involved in the process, both NGO-sponsored paralegals, district and local government civil servants, and judicial officers[20].

The new Family Law passed in 2004 is also very progressive in terms of providing for gender equality. The Law explicitly affirms monogamous marriage, equal parental authority, gender equality in property ownership, joint property registration, equal entitlement to half of the goods purchased together, and inheritance rights for women. This is a radical shift with respect to the previous Family Law, where spouses were fourth in line for inheritance after children, parents and brothers. In patriarchal settings, in particular, properties returned to the family of origin at the death of a male member, so that widows and the orphan children had no formal title to access the home and land they had used previously.

Despite the progressive formulation of the new Family Law, customary norms, religious beliefs and social practices tend to contradict gender equality and to continue to produce gender-differentiated land rights. Specific customary traditions vary from one region to another; however, patriarchal gender relations are preponderant, and restrict women's access to land-use rights, benefits, labour and natural resources in community and in private life. Moreover, even in matriarchal societies, women only have rights through their male relatives, such as brothers or maternal uncles.

The new Family Law also bans marriage before the age of 18 and guarantees the right of both partners to choose a spouse and enter into marriage with free and full consent. Customary norms, religious beliefs and social practices are very distant from gender equality also in this respect: initiation rites for girls are still highly regarded, as they prepare young girls for their role as wives and mothers; especially in rural areas, young girls are often forced into leaving school and early marriages. Moreover, polygamy is widely diffused, especially among the large Muslim population, obviously limiting most forms of women's economic agency within the family and in society at large. That is, experience makes it clear that "Simply having a progressive law 'is not enough' to bring about transformative change in a country"[21] – and this is a lesson that holds way beyond Mozambique.

[20] Tanner, C.; Bicchieri, M, *When the law is not enough. Paralegals and natural resources governance in Mozambique*, FAO, 2014, http://www.fao.org/publications/card/en/c/65d4e433-1e69-4b24-ab9b-951319092609.

[21] Tanner, C.; Bicchieri, cited above.

3. GENDER INEQUALITY AND WOMEN'S EMPOWERMENT IN AGRICULTURE

Women's dignity, empowerment and agency are central to development, and yet so often denied. We can rely on a number of different indices in order to capture measures and determinants of gender inequality, within different societies.

We can identify three broad categories of indicators. The first (relatively large) family of indicators derive from the Human Development Index introduced by UNDP in 1990 implementing of Amartya Sen's approach, according to which people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone. The Gender Inequality Index (GII), the Gender Development Index (GDI), and the Global Gender Gap Index (GGI) are examples of this category, where indicators summarize measures of average achievement in key dimensions of human development, especially identifying female achievements and/or gender gaps. This family of indicators is based on aggregated attributional data, with their pros and cons.

Efforts toward adopting a relational perspective are quite demanding, and I see two relatively new and innovative measures, namely the OECD SIGI (Social Institutions and Gender Index) and the WEAI, (Women's Empowerment in Agriculture) moving in that direction. OECD SIGI represents an interesting exercise in evaluating the institutional setting in order to identify discriminatory rules and practices, leading to gender inequalities in various dimension of women's life, from family to civil liberties. Hence, OECD SIGI focusses on institutional relations that are conducive to women's inequality (second category).

The WEAI's project, very promising and rapidly growing, is more clearly "relational" in its setting. It is specifically targeted on rural women, and it measures the empowerment, agency and inclusion of women in the agriculture sector, by using a survey method that goes beyond the traditional practice of interviewing only one household "head" per household (often a male), to interview both a principal male and a principal female within the household. Thus, the survey allows exploring different relational dimensions also within rural households' lives (third category).

Indicators derived from the Human Development Index (first category) provide the widest coverage, both in time and space.

UNDP, the institution that pioneered the Human Development Index (HDI) as a multidimensional measure of development for countries and regions, also provides two gender related indices: the Gender Inequality Index (GII), and the Gender Development Index (GDI). The GII measures gender inequalities in three important aspects of human development: reproductive health, measured by maternal mortality ratio and adolescent birth rates; empowerment, measured by proportion of parliamentary seats occupied by females and proportion of adult females and males aged 25 years and older with at least some secondary education; and economic status, measured by labour force participation rate of female and male populations aged 15 years and older[22].

The GDI measures gender gap in human development achievements in three basic dimensions of human development: health, measured by female and

[22] http://hdr.undp.org/en/content/gender-inequality-index-gii.

male life expectancy at birth; education, measured by female and male expected years of schooling for children and female and male mean years of schooling for adults ages 25 and older; and command over economic resources, measured by female and male estimated earned income. The index uses the same methodology as in the HDI, thus revealing that gender gaps in human development are pervasive. On average, at the global level, female HDI value is about 8% lower than male HDI, with strong disparities across countries (ranging between 0% and 40%), groups and regions[23].

The World Economic Forum Global Gender Gap Index (GGI)[24] provides a different measure of gender-based disparities, tracking national performance over time and focusing on one aspect of gender equality, namely the relative gaps between women and men across four key areas: health, education, economy and politics. The smaller the gap, the higher the ranking. In particular, GGI focuses on measuring gaps rather than levels, in order to make the Global Gender Gap Index independent from the countries' levels of development; and it captures gaps in "outcome" variables (health, education, economic participation and political empowerment) rather than gaps in input variables (policies, rights, culture or customs).

Though interesting, ranking countries according to gender gaps in outcomes is not very informative on what are the deep determinants of gender inequality. Specific institutional relations can be conducive to women's inequality, and this leads us to the second category of gender indicators. The OECD SIGI (Social Institutions and Gender Index) was exactly developed in order to explore the roots causes of gender inequality in outcomes, broadly identified in discrimination against women in social institutions (formal and informal laws, social norms, and practices). Discriminatory social institutions are crucial drivers of gender inequality, by restricting women's and girls' access to justice, their rights and empowerment opportunities and by undermining their agency and decision-making authority over their life choices. Thus, they tend one the one side to perpetuate gender gaps in education, employment and health, as captured by human development indices for women; on the other side, to deprive society of women' creative potential and hinder development.

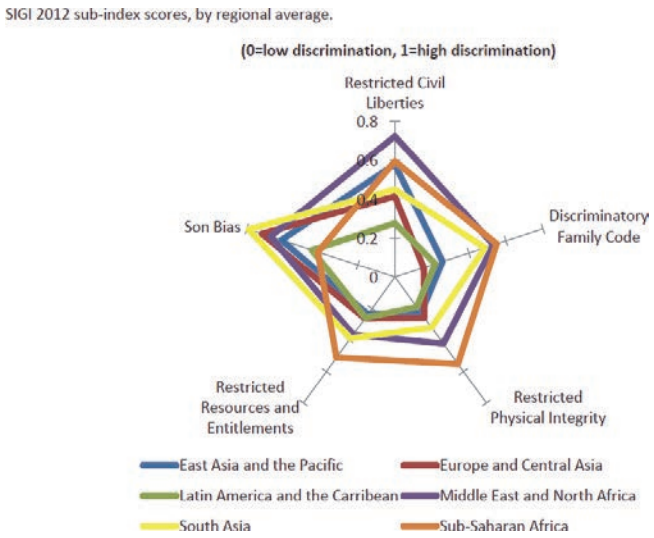
SIGI ranking of how discriminatory institutions are is based on quantitative and qualitative data collected across 160 countries; consistent ranking allows for obtaining cross-country comparable measures. The Gender, Institutions and Development Database (GID-DB)[25] is the research base of the SIGI. Through the GID-DB, there is full access to all SIGI data for 160 countries, thus making it possible to use one or more variables from the dataset to analyse a specific development question.

The SIGI covers five dimensions (sub-indices) of discriminatory social institutions, spanning major socio-economic areas that affect women's lives which are thoroughly described in the SIGI Methodological Background Paper[26]. The *Discriminatory family code* sub-index captures social institutions that limit

[23] http://hdr.undp.org/en/content/gender-development-index-gdi.
[24] http://reports.weforum.org/global-gender-gap-report-2014/part-1/the-global-gender-gap-index-2014.
[25] http://www.oecd.org/dev/poverty/genderinstitutionsanddevelopmentdatabase.htm.
[26] http://genderindex.org/sites/default/files/Backgroundpaper.pdf.

women's decision-making power and undervalue their status in the household and the family; *Restricted physical integrity* measures social institutions that limit women's and girls' control over their bodies, that increase women's vulnerability, and that normalise attitudes toward gender-based violence. *Son bias* captures unequal intra-household investments in caring for, nurturing and allocating resources to sons and daughters, reflecting the lower value given to girls. The *Restricted resources and assets* sub-index captures discrimination in women's rights to access and make decisions over natural and economic resources, including discriminatory practices which undermine women's rights to own, control or use land and non-land assets; discriminatory practices that restrict women's access to financial services; and social norms imposing that women's assets be mediated only by men. Finally, the *Restricted civil liberties* sub-index refers to discriminatory laws and practices that restrict women's access to public space, their political voice and their participation in all aspects of public life.

Unsurprisingly, different kinds of discriminatory institutions tend to prevail in different regions[27], with Sub-Saharan Africa exhibiting the highest discrimination towards women in access to land, other resources and financial services, while Central and Southern Asia stand out for discriminatory practices towards girls' lives, from the very beginning of their existence.



There are regional differences in different dimensions of discriminatory social institutions
Somali C. and Francavilla F., *Tackling the root causes of gender inequalities in the post-2015 development agenda*, OECD Development Centre, Paris, October, 2012, p. 10

The third, more "relational" category of gender indicators is the Women's Empowerment in Agriculture Index (WAEI). Launched in March 2012 by OPHI

[27] http://www.wikigender.org/images/d/d1/Tackling_the_root_causes_of_gender_inequalities_OECD_DEV.pdf.

(Oxford Poverty & Human Development Initiative) with the United States Agency for International Development (USAID) and the International Food Policy Research Institute (IFPRI), WEAI provides a new approach on gender issues in a development perspective[28]. It measures the empowerment, agency and inclusion of women in the agriculture sector, tracking women's engagement in agriculture in five domains: production, resources, income, leadership, and time use. Using a survey method that goes beyond the traditional practice of interviewing only a household "head" (often a male) to interview both a principal male and a principal female, it measures women's empowerment relative to men within their households, providing a more robust understanding of gender dynamics within households and communities. In May 2014, the U.S. Government's global hunger and food security initiative, Feed the Future, launched the Women's Empowerment Global Synthesis Report, which provides a comprehensive analysis of the WEAI baseline survey results for thirteen countries[29].

The WEAI is an aggregate index reported at the country or regional level that is based on individual-level data on men and women within the same households. It is composed of two sub-indexes: one measures the five domains of empowerment for women, and the other measures gender parity in empowerment within the household. The five domains of empowerment (5DE) sub-index assesses whether women are empowered, within their households and communities, across production, resources, income, leadership, and time use. For the women who are disempowered, it also shows the percentage of domains in which they meet the required threshold and thus experience "sufficiency". The second sub-index, i.e. the Gender Parity Index (GPI) compares the agricultural empowerment of men and women living in the same household, and it reflects the percentage of women who are as empowered as the men in their households; for those households that have not achieved gender parity, the GPI sub-index shows the gap that needs to be closed for women to reach the same level of empowerment as men. Based on both sub-indexes, the WEAI is an aggregate index that shows the degree to which women are empowered in their households and communities, and the degree of inequality between women and men within the household.

TOWARDS A RELATIONAL, DYNAMIC PERSPECTIVE OVER WOMEN, FOOD SECURITY AND DEVELOPMENT

There is something like a *female genius* in development, as generation can be seen as a powerful metaphor for development. A well-rounded notion development can be represented as a dynamic story of *generation*, as opposed to a technocratic process of (enlarged) material *reproduction*[30]. Elemental

[28] http://www.ophi.org.uk/wp-content/uploads/2012_WEAI_Brochure.pdf?13666f.

[29] http://cdm15738.contentdm.oclc.org/utils/getfile/collection/p15738coll2/id/128190/filename/128401.pdf.

[30] "Simple reproduction" (steady state) and "enlarged reproduction" (growth) used to be common expressions in Growth Theory textbooks. More sophisticated versions of growth theories have been subsequently developed, including dynamics of so-called endogenous growth, keeping their basic mechanistic approach.

experience can easily tell the difference between these two seemingly similar concepts.

Think of a baby, to whom both concepts apply: human reproduction does not require a long personal involvement (from few minutes, to nine months); as biotechnologies make further steps, the time of human involvement in reproduction may even be further reduced. But generation largely exceeds reproduction: for a new human being to fully flourish we need personalized and durable relations of care ("feeding" materially, and symbolically). Generation comes from *genos*, origin – as the words gender (male-female) and genealogy (the individual, in vital connection with his or her personal history)[31]. Being generated is an experience common to parents and child; to all parents and all children; it is a basic human experience. Reproduction can be seen as a form of power (to give life; or to withhold it), and even as a right (assisted fecundation); but there is something ultimately gratuitous (from *gratia*, grace) in generation.

Something similar applies when confronting material growth and development: elemental experience can tell the difference between mechanistic growth and well-rounded change for the better in personal and societal life conditions. Generation, in the family as well as in economic development, implies not just producing and distributing increasing amounts of output, but also investing in good quality relationships. Ultimately, development is a path where human dignity and human worth are fully recognized and affirmed.

[31] Cigoli V., Scabini E., *Family identity. Ties, symbols and transitions*, Lawrence Erlbaum Associates, New Jersey, 2006.

Indigenous People's Rights in Access to Land

Birgitte Feiring[1]

Leaving aside cultural stereotypes, when we talk about indigenous people, we refer to a concept under international law that corresponds with a well-defined set of individual and collective rights. The term "indigenous peoples", indeed, is a common denominator for approximately five thousand distinct peoples, who are present basically in all the regions of the world. Total number is difficult to estimate (due to the lack of a generally accepted definition, thus to different ways to count them, and to the lack of data, particularly in those countries which do not recognize indigenous peoples as such), but approximately they are esteemed in 370 million, roughly 5% of the world population. The United Nations[2] estimates they represent as much as 15% of the world poor and 33% of extremely poor rural people. Indigenous people are often marginalized, even if they are the custodians of human cultural wealth, as they actually represent the majority of the world languages and cultures.

This contribution aims to present some common features of indigenous people related issues (1), their protection under international law (2), as well as an introduction to specific regional contexts (3). It also gives a reflection on the socio-cultural difficulties that indigenous women face (4) and on the challenges and opportunities related to the protection of indigenous peoples' rights (5).

1. INDIGENOUS PEOPLES AND ACCESS TO LAND

One of the defining characteristic of most indigenous peoples is the strong spiritual, cultural, social and economic relationship they have with their land: far away to be seen only as an economic commodity, to some extent, for many peoples land is life and, if they are moved away from their land, their possibility of existing as a distinct culture enormously decreases. Even if it could be possible to find some recurrent characteristics of these peoples, creating a universal definition, due to their diversity, is neither necessary nor desirable: the international community agreed on a set of objective and subjective criteria, which are included in the Convention No. 169 of the International Labour Organization. Among them: *i)* indigenous peoples are those who descend from pre-State societies and thereby, with the coming of nation states, lose their right to self-determination; *ii)* they have distinct institutions and conditions

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The author acknowledges Ms. Chiara Spinelli (UCSC) for assistance in the elaboration of this contribution.

[2] UN Department of Economic and Social Affairs (DESA), 2009.

and are still practicing their own customary law, including land transmission. Beside these objective criteria, there is one that is quite unique in international law: *iii)* the self-identification as indigenous. Emphasizing on the perception of themselves, this criterion aimed to balance the State monopoly defining who is who, even if some governments are still quite reluctant to embrace these criteria, all with a view to reduce the rights of these peoples.
Regionally, nationally and locally, there are very different contexts and very different terms to talk about these peoples. For example in Nepal, where indigenous peoples are divided in more than 92 ethnic groups and represent around 40% of the total population, they are called Janajati; in India Adivasi (that literally means "who came first"); in Latin America Indigenous or Aborigines. The term "indigenous peoples" is a common denominator that speaks about their political relationship vis-à-vis the state.

In policy making, indigenous peoples need a particular attention because of their crucial role with regards to sustainable development, environmental and biodiversity protection, traditional knowledge and climate change adaptation. Protecting them and their traditional livelihood practices, indeed, means to protect the environment, biodiversity and our common human cultural wealth. Despite these intrinsic values, which should be preserved *a priori*, indigenous people are extremely vulnerable to, for example, land grabbing, forced relocations and criminalization of traditional occupations: the reason dates back to the colonial period, when conquerors did not issue land titles to the original populations and national system often fails in recognizing communal property. Until today, many of them have no legally recognised rights to the lands, territories and resources they largely depend upon.
Among other organizations, International Land Coalition is doing a great effort to document large scale land acquisitions, revealing that deals are taking place especially on indigenous peoples' lands, where their rights are not legally recognised. This is one of the reasons why the international community stresses the necessity to adopt a right-based approach which is able to specifically focus on the protection of indigenous peoples' rights: if no specific effort is devoted to their protection, there is a risk that interventions (also development interventions) may undermine these peoples' rights due to their high vulnerability.

2. UNDRIP & ILO CONVENTION NO. 169

Indigenous peoples' rights, including the right to lands, territories and resources, are affirmed and underpinned by the full range of human rights instruments. These instruments are related to education, health, right to life, right to food: they do not provide special rights, but contextualise the whole range of human rights to indigenous peoples' particular situation. Many of these instruments are accompanied by mechanisms to promote compliance[3].

[3] For a more detailed dissertation, see Feiring, B. (2013), "Indigenous peoples' rights to lands, territories and resources", ILC, Rome.

In particular, the key international instruments that define indigenous peoples' rights are the ILO Convention No. 169 on the rights of indigenous and tribal peoples in independent countries[4], adopted in 1989 and ratified by 22 countries, and the UNDRIP[5], adopted in 2007. If the first one has legal implications for countries that ratified it, the second one is a declaration representing a global consensus on the issue. These instruments are very similar, especially about access to lands, territories and resources, and they are mutually reinforcing.
In both instruments, the existence of **collective human rights**[6] is strongly affirmed. It includes that territories may be titled to a community or a group of people and, as a collective subject, they have rights to participate in decision making (whenever the State will take decisions that can affect them) not only through an individual voice, but also through their traditional institutions.
These instruments refer also to the concept of territories[7] and rights to natural resources[8] by including the right to own, use, develop, and control these resources, and it is fundamental to underline that the recognition of such ***rights are based on traditional occupation, ownership or use***[9]. Indeed, ILO (2013) states that "*the traditional occupation and use [...] is the basis for establishing indigenous peoples' land rights, and not the eventual official recognition or registration of that ownership*"[10].
The same instruments also include the strong provision that indigenous peoples should not be relocated[11] and, in the end, they affirm the duty, for the State, to **consult indigenous peoples and obtain their free, prior and informed consent**[12] (the FPIC condition) before adopting measures or projects that could affect their rights, their lands or their territories. Whenever a relocation of indigenous people to other territories is necessary and not avoidable, the right to return should be guaranteed (if relocation is temporary), otherwise the right to a fair compensation applies[13].

3. REGIONAL CONTEXTS

In *Africa* there are still shortcomings in terms of definition and identification of indigenous peoples: only few countries have developed legislations or policies

[4] The Convention has been ratified by 22 States, while other ILO Conventions have almost universal ratification, indicating the reluctance by many States to make international commitments regarding indigenous peoples' rights.
[5] United Nations Declaration on the Rights of Indigenous Peoples. It has a very unique history as it was negotiated during 25 years within the UN system. Indigenous peoples' representatives were involved in the negotiation of the draft declaration, in a sub-commission under the Human Rights Council. It was adopted by an overwhelming majority within the UN General Assembly (2007).
[6] UNDRIP preamble, art. 25; C169 art. 13.1.
[7] UNDRIP, art. 26; C169 art. 13.2.
[8] UNDRIP, art. 25; C169 art. 15.1.
[9] UNDRIP, art. 25, 26.1, 26.2; C169 art. 14.1.
[10] ILO, *Handbook for ILO Tripartite Constituents: Understanding the Indigenous and Tribal Peoples Convention, 1989* (No. 169), International Labour Office, Geneva.
[11] UNDRIP, art. 10; C169 art. 16.1.
[12] UNDRIP, art. 19, 32.2; C169 art. 6 and 15.2.
[13] A fair compensation includes the right to receive lands of an equal quality and legal status to the lands they previously occupied, or, once preferred by the indigenous people to be compensated, different forms of payment for the value of the lost lands.

to protect them. The only State that ratified ILO Convention No. 169 is the Central African Republic, but good practices are very rare. The ACHPR, African Commission on Human and Peoples' Rights, had a crucial role in analysing and addressing the main African issues in this field, which often are related and deeply connected to extreme poverty, discrimination and human rights violations. Indigenous peoples here are mainly pastoralists and hunter-gatherers and they largely suffer from marginalization in the society. Some examples are the Maasai, Turkana, Hadzabe, etc. of West and East Africa, the San of Southern Africa and the so-called "Pygmies" of the Central African region. Also the Twa of Ruanda and Batwa of Burundi are considered indigenous peoples: traditionally hunter–gatherers, their access to forest resources has generally been restricted.
Latin America is the region where most progresses have been made with regards to constitutional and legal recognition of indigenous peoples' rights. Across the continent, 14 countries have ratified the ILO Convention No. 169 and most countries have developed legislations, which recognize indigenous peoples' rights to lands, territories and resources. Huge areas have been demarcated and titled in favour of indigenous communities but problems remain with regards to ensuring consultation and FPIC: States still have to re-educate themselves to implement the duty to consult and not just make decisions without considering indigenous peoples' voices. In particular, many conflicts have arisen with regards to the exploitation of natural resources by extractive industries, leading sometimes to conflicts. Within these contexts, governments are faced with pressures to produce legislative and regulatory framework.
Asia presents a mixed picture simultaneously composed by the recognition of the concept of indigenous peoples and, on the other hand, denials of their rights; however, the Asian region is characterized by the presence of strong organizations and networks which actively work on the issue. Only one country, Nepal, ratified ILO Convention No. 169, whereas others have developed legislations to recognize some aspects of collective communities, whose main problem remains the weak implementation. Some of the biggest issues here are related to livelihood practices (such as shifting cultivation) and to land grabbing.
Particularly in Asia, the mechanism of REDD+ is providing some leverage. REDD+ is a global initiative which aims to reduce the emissions from deforestation and forest degradation through economic compensation: if developing countries, such as Indonesia and other countries commits to reduce carbon emissions related to forest destruction, they will receive compensations. As forest destruction is a major contributor to CO_2 emissions, REDD+ is an attempt to prevent the reduction of forested areas through economic incentives to governments. Indigenous peoples, who traditionally live in and preserve those forests, have used, as a slogan, *'no rights, no REDD+'*. Mechanisms such as the UN-REDDD of the United Nations and the Forest Carbon Partnership Facility of the World Bank are assisting counties in preparing for REDD+, and to put in place safeguards for respecting indigenous peoples' rights.

4. INDIGENOUS WOMEN

Indigenous women have a close relationship with their land and play a key role in families, communities and nations as primary food providers, as well as custodians of culture and knowledge: their long term perspective makes them privileged actresses to transmit knowledge on environmental conservation for future generations. However, they suffer from a double marginalization; as indigenous and as women, sometimes even within their indigenous communities. Hence, eradicating gender discrimination also requires a sustained dialogue with customary law institutions. The international law principles are quite clear, as the UNDRIP, article 44, states that indigenous peoples have the rights to practice their own customary law as long as this is in accordance with international recognized human rights. However, the application of this remains a challenge.

This gender discrimination is reflected in access to land too, where women do not have right to land or right to land inheritance. An innovative approach is required to deal with this problem, but customary law is generally very flexible and has a high capacity of adaptation to new circumstances, even if it may take time and require capacity-building. In relation to indigenous peoples, the recognition of individual land rights would not necessarily be the proper solution, as it may not be culturally appropriate. Communal and collective property rights may better suit the recognition and preservation of traditional livelihoods. Indigenous women themselves are showing the way, as their organisations are growing and proliferating throughout the African, Asian and Latin American regions, and they are claiming their rights

5. SHARED CHALLENGES AND OPPORTUNITIES

The non-recognition of indigenous peoples as collective rights-holders by many countries is one of the most important challenges that still require particular attention. It opens a wide range of challenges, from the limited data and weak monitoring of the implementation of the existing legislation, to the more serious issues of human rights violations and the continuing loss of land, territories and resources.

From this point, it is particularly interesting to mention natural resources: indigenous peoples' rights are not only to lands and territories, but also to the resources embedded in those lands including whatever mineral, oil and gas reserves found there. However, many States maintain ownership of subsurface or mineral resources and their exploitation, among other consequences, may lead to undermining indigenous control of territories, environmental degradation, displacement or other direct negative effects on the indigenous people living there. In order to exploit such resources, States often push indigenous peoples away from their land; often evoking the need to balance the interests of the state with those of indigenous peoples. Hence, there is a need for rights-based approaches and safeguards for indigenous peoples, including benefit-sharing mechanisms. Lands and territories with security of tenure present challenges too. In many territories, even if the access and use of land is recognized, it can be very difficult to maintain a sustainable livelihood, as States have generally not invested in local infrastructures, education and

health services in these areas. One of the clearest examples is the Bolivian indigenous peoples' situation: located in the highlands on recognised territories, mainly old and young people are still there, whereas the rest was forced to migrate, even towards other countries, in search of work.
Moreover, many indigenous peoples do not have a sedentary lifestyle, and this represents another important factor to be considered. Hunter-gatherers, pastoralists or semi-pastoralists, generally need large extension of lands, as mobility represents their life-strategy. Such lifestyles are often wrongly portrayed as backwards or non-productive. For pastoralists, another problem is the indigenous peoples' migration across national borders, as it occurs in Tanzania, Kenya, but also Sweden, Norway and Finland. States find it very difficult to handle with this concept, as peoples move around and make a use of resources in a flexible way; this requires that States find a flexible solution, not merely fencing them in individual plots. Dealing adequately with indigenous peoples and the multiple situations they present, remain a huge challenge. Forced and imposed development that disregard the value of indigenous peoples traditional livelihood strategies and cultures cannot be considered a solution to the problems presented above: In the Andes region, in Latin America, indigenous peoples in the 1950s were pushed towards modernization, by assigning them individual plots of land, undermining their traditional culture, institutions and, consequently, land itself.

An increasing number of institutional soft-law commitments are taking rising relevance with regards to the recognition and protection of indigenous peoples' rights, and they can be considered a significant step forward to improve the approach to these issues. The European Commission, for example, came up in 1998 with a policy on support for indigenous peoples in development cooperation which, inter alia, stipulate to stop the implementation of European funded projects on indigenous people' lands if indigenous people did not give their prior and informed consent. Likewise, the UNDP (United Nations Development Program), the World Bank, an increasing number of UN agencies and bilateral donors are taking important steps to stop projects infringing upon indigenous people's rights, especially when governments do not recognise their rights to lands, territories and resources. On August 2014, the UNDP released a new and unprecedented set of social and environmental standards, which are particularly strong in affirming that projects violating human rights will not see the participation of the UNDP. Traditionally, UN agencies did not realize any type of these safeguards, convinced of the positive purposes of their projects. However, later on, it was clear that, for example, the conversion of land into agricultural land could have harmful consequences, e.g. on pastoralists. These (involuntary) harmful effects, combined with the need to access funds from international financial institutions, pushed UN agencies to adopt safeguards, The UNDP standards are more protective than the World Bank ones.

CONCLUSION

Beside difficulties and a still generalized misperception about indigenous peoples' land and resource use, there is an arising consciousness of the importance of protecting indigenous peoples' rights, as an integral element

of the promotion of human rights, good governance, sustainable development and environmental protection. Several organizations are now active actors in the international and national debates, with a positive effect on legislative and policy developments on the protection of indigenous peoples' rights. Within this context, the FAO Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests represents a critical tool for promoting and advocating for indigenous peoples' rights, in line with UNDRIP and other international instruments.

Land Conflicts and the Role of Institutions

Sara Balestri[1]

This contribution aims to introduce the multiple roles that land plays in society and, therefore, the reason why it is likely to be correlated to conflict events (1); to frame the analysis in a wider approach also including the external triggers which may interact in violent land conflict escalation (2) and, finally, discuss some empirical evidence about the impacts of land conflicts on development (3). It also gives information about land conflict resolution experiences.

1. THE COMPLEX ROLE OF LAND IN SOCIETY

When approaching land issues, it is critical to think over the broad meaning that such resource encompasses for human societies, and thus the implications for all actors involved. In a holistic view, "land" basically refers to a delineable area of the earth's terrestrial surface, encompassing all attributes of the biosphere immediately above or below this surface, including near-surface climate, soil and terrain forms, surface hydrology (shallow lakes, rivers, marshes and swamps), near-surface sedimentary layers, groundwater, plant and animal populations, human settlement pattern and physical results of past and present human activity (terracing, water storage or drainage structures, roads, buildings, etc.) (FAO/UNEP, 1997).

It is straightforward to recognize that land is a valuable asset to be used as economic input in production systems, with a major role in agricultural activities where it represents a natural source of food (including agricultural goods, fruits and vegetables freely collected, forage and pastures) and a source of income, since such activities may be able to exceed the production of subsistence goods and generate market dynamics. Moreover, land plays a critical role as natural safety net for poor households, especially during times of crisis, whether they are caused by natural reasons – such as extreme atmospheric events or droughts – or they are human induced – for example, political instability or civil conflicts. In these cases, indeed, accessing to land allows subsistence and self-sufficient farming and having a shelter. In post-crisis settings, land may be used also as collateral to have access to credit, especially for rural and poor households, usually badly constrained by the inability to access formal credit market. Finally, land implies an economic value by itself, and when property rights are fully defined, it could be sold, rented or inherited by future generations, representing a capital which can be used or transmitted across years.

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However, beyond being a physical object with an economic value and an asset, land is a resource deeply characterized by emotional, cultural and historical ties. In many societies, land is the source of social identity, encompassing the culture and the history of a community – for example, through religious and historical traditions, customary rituals, presence of ancestors' graves. In these terms, lack of access to land may prevent people to play a full part in society, be integrated in the community; as a consequence, social exclusion grows. Where secure land rights are not enforced, anti-social attitudes are more likely to rise as well as adverse behaviours with respect to rule of law. In some cases, having access to land is the critical element to define the community membership, this is particularly relevant in traditional and indigenous societies, where people may be excluded by local communities once they are not recognized as connected to their land.

Finally, land plays a further role in shaping society features, since it represents an irreplaceable source of political power, both in terms of homeland security and livelihoods preservation. For this reason, land issues may be easily used to mobilize communities, strengthen the attractiveness of political agendas and raise active participation. Being a source of social identity, an armed mobilization is more likely to occur when land issues overlap and mingle with other lines of social cleavages, such as religious and ethnic ones.

Land is crucial to social and economic development, as the majority of poor people, especially in Africa, depend on land and land-based resources for their livelihoods. Once we consider land in a broad perspective, encompassing all social dimensions it embraces, it is straightforward to conclude that securing equitable land rights for all is a mean for conflict prevention and inclusive pro-poor growth. Having secure (and equitable) access to land, indeed, can allow people to produce food for their consumption and to increase income. Particularly for the rural poor, land and related resources are the source of food and shelter; the basis for social, cultural and religious practices; and a central factor in economic growth. The term security of tenure refers to "*the degree of confidence that land users will not be arbitrarily deprived of the rights they enjoy over land and the economic benefits that flow from it*", in other words it is the certainty that a person's rights to land are recognized by others and protected in case of violations[2]. It is basically composed of three elements: *i)* clarity and recognition of land rights; *ii)* reasonableness of the duration of the right for use; *iii)* effectiveness of the protection against arbitrarily loss. Where such elements are guaranteed, the probability of violence escalation into conflicts over the resource is substantially reduced.
At global level, two major dynamics are affecting land issues: increased population density and fast growing demand for land for commercial and resettlement purposes. These dynamics may sustain a virtuous process of property rights definition and security of tenure, investments and rise in

[2] FAO (2012), Voluntary Guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security, Rome. Accessible at http://www.fao.org/docrep/016/i2801e/i2801e.pdf.

productivity. However, a failure in responding with appropriate institutional innovations, able to harmonize existing tenure systems and current dynamics, can lead to downward spirals of conflict[3]. The existence and quality of land institutions and governance have a significant impact on whether disputes are peacefully managed or transformed into conflicts. Institutions indeed, play a major role in addressing social tensions and de-escalating disputes by framing contrasts in legally bounded spaces of confrontation.

Since land grievances may increase insecurity, land dispute management efforts should focus on addressing land-related grievances as part of a comprehensive conflict prevention strategy which refers to the action of all actors involved in conflict prevention, management and post-conflict interventions such as civil society, NGOs, government, and international agencies. There exist several ways to include land issues in such interventions ranging from the establishment of monitoring mechanisms (also during in peace-keeping missions, e.g. Liberia), strengthening land dispute resolution capacity at local and national level, promoting information and sensitization campaigns about land rights and policies, sustaining dialogue and promoting alternative non-violent approaches to land grievances.

Three main channels can be used to approach land dispute resolution:

- ***Customary*** approach: traditional authorities and local courts usually tend to promote a consensus oriented approach, through local knowledge of land rights and a rooted local legitimacy;
- ***Non-consensual*** approach: it mainly refers to adjudication and arbitration procedures where a third party, whose legitimacy is statutory recognized, judges over a land dispute and have access to enforcement mechanisms;
- ***Consensual*** approach: consensual process of negotiation, alternative to both litigation in courts and customary conflict resolution systems. An example is represented by the mechanism of Alternative Dispute Resolution (ADR), which is widely supported by many international agencies and is based on strategies of mediation and conciliation.

Whatever the type of approach is adopted according to the local context, appropriate land governance systems are critical elements for the effectiveness of these resolution strategies. Inadequate land governance may be found in ambiguous recognition of rights, existence of deliberately unclear laws or discriminatory practices, marginalization of public participation in decision-making and unequal distribution of benefits and costs arising from the use of the land.

2. LAND CONFLICTS

Conflict and other kind of disputes are common features of human life in every social relationship and they might be a clear signal of the exercise of freedoms and assertion of interests, even on contrast with others. However, at times such disputes can escalate into violent conflicts, encompassing widespread consequences in terms of individual and communities' losses, large-scale

[3] Deininger K. and Castagnini R. (2006), Incidence and impact of land conflict in Uganda, in *Journal of Economic Behavior & Organization*, vol. 60, pp. 321-345.

displacements of people, social security and economic growth and, in that way, strangling development opportunities and diverting resources. In addition, where violent conflicts rise, land and other natural resources are often found as root causes or major contributing factors. For this reason, mitigating and preventing land disputes represent a critical step in fostering development paths and avoiding the outbreak of violence. In order to prevent land-related conflicts, it is necessary to adopt a holistic approach which encloses the multiple meaning of land for human societies and recognize access to land and control over land-based resources as a pivotal component of every development strategy. It is worth nothing that this means securing land rights beyond formal property rights, and straitening legitimacy and effectiveness of justice institutions – including informal and traditional systems – at grass-root level[4].

There is no single definition to distinguish the phenomenology of conflicts over land, since they can assume very different forms and intensity, so that they may occur under a variety of social phenomena that get out of a single definition. Indeed, conflicts over land are a widespread phenomenon, and can occur at any time or place: they can be related to different socio-economic dimensions referring to the access to the resource, as well as to its use or collection of the economic and social benefits that flow from it. Land conflicts tend to be dynamic and the relation between the resource and violence is complex and changing over time. Some common source of land-related conflicts can be identified in the choice of which income-generating activities may be undertaken; or in the choice between competing and conflicting uses (for example, the change of use of a land plot due to new commercial agricultural activity or mining); in payment denial of the revenues coming from the exploitation of the resource; in issues of sale, leasing or inheritance of land rights, but also in the attempt to exclude other possible actors from using or collecting the benefits deriving from the resource, as well as in issues of compensation in case of expropriation or occupation by others. Disputes over land may emerge between land holders and their neighbors, relatives, landlords, governments or other economic actors (foreign companies with local investments, for example). Finally, it is clear that conflicts over land can be stirred up (and they often are) by the desire to gain access to other land-related resources, such as, for example, water, forests and mineral resources. Land-related conflict, indeed, may be channelled into wider conflicts: the misuse and diversion of natural resources revenues, for example, may fund and reinforce conflict dynamics.

The common feature that embraces this wide range of phenomena is that land conflict can be defined as an (violent) event, where at least two parties are involved, over land property rights. Due to the lack of a strict definition and the variety of events to which we refer to, it is very hard to monitor and, consequently, get overall estimates about the occurrence of such events. The actual number of land conflicts at global level is almost not known, but estimates are very high: for example, in Cambodia 850,000 people (6,5%

[4] In many African countries, for example, disputes are likely to be resolved by traditional institutions – customary and religious institutions – which are characterized by their informal status and represent a core pillar of legal systems, especially in rural societies. Due to geographic distances, costs and inadequate legal institutions, indeed, the most frequent source of conflict resolution in Africa remains traditional authorities (USAID, Africa Regional Rule of Law Status Review, 2009).

of the population) have been directly affected by land conflicts in 2005, and estimates calculated by the NGOs Forum on Cambodia indicate a sharp increase in the occurrence of land conflicts in the last few years[5].
However, it should be noted that land and land-related resources are almost never the only cause of a conflict: in particular, disputes over land tend to become violent when they are complementary and overlapping to other issues such as political exclusion, social discrimination and economic marginalization of specific groups. Moreover – since land represents an economic input, a source of livelihoods, incorporates a strong social role and carries spiritual values – where pressures over the resource make land access denied or discriminatory for minorities or specific groups, it is likely that land grievances rise along ethnic or religious lines. The radicalization of such grievances and claims may facilitate the mobilization of entire social groups and, in that way, reduce the economic cost of recruitment and participation to (armed) violent groups. Finally, social tensions referring to unequitable access to land can be easily manipulated to support opportunistic political interests.
In other words, mismanagement of land is likely to result in loss of economic opportunities and radicalization of social discriminations, behind jeopardizing security and growth. Thus, understanding who have the power and control over land and land-related resources is crucial.
Finally, it is worth noting that there is a strong connection between conflicts over land and food security. A first correlation is obvious: the existence of conflicts and social unrest over land may substantially limit the ability of individuals to produce food, to access to local markets of agricultural products and livestock as well as to be able to protect own property. Thus, these restrictions have a negative impact on rural households in terms of food production and income generation. In low-income countries, these effects produce even greater impacts since such countries are often characterized by weak institutions, persistent inequalities, a weak recognition of land rights, the existence of economic opportunities generated by illegal actions (capillary systems of corruption or illegal trade, for example) – which can exacerbate existing tensions and support dynamics of conflict.

2.1 *Land conflict triggers*

Conflict can emerge from unequal distribution of access and control of land and land-related resources: lack of appropriate policies, weak and corrupted institutions and the mismatch between traditional and current (private and commercial) uses of land, indeed, are direct causes of land dispute. However, there are other factors which may trigger conflicts over land and produce further inequalities in land access. To summarize, we can distinguish three main sources of conflict drivers:

- ***Displacement events***. Extreme natural events – such as drought, floods and landslides – are increasingly occurring. One immediate effect is the

[5] Reported in Wehrmann B. (2008), Land conflicts: A practical guide to dealing with land disputes, GTZ, Eschborn. Data and analysis of the NGO Forum on Cambodia can be accessed at http://www.ngoforum.org.kh.

presence of displaced people who are forced to move somewhere else, leading to frequent conflicts with people living there or between the communities themselves in order to have access to land. In addition, these events are likely to destroy harvests and the ability of poor people of using in a productive way their land, reducing in that way the benefits deriving from the resource and perpetuating dynamics of poverty and instability.

Climate change exacerbates the frequency and magnitude of the effects of such events: deriving implications in terms of water supply, human health, biodiversity loss and agriculture impoverishment become in turn sources of land dispute and contrasting interests.

It is straightforward that the existence of latent conflicts and civil disorder is likely to interact and reinforce contrasts over land access and use.

- ***Increasing competition over land.*** Land is a scarce resource in many countries and it faces increasing pressures over its use due to several reasons such as the *i)* rising demand for commercial land (Large-Scale Land Acquisitions and *land grabbing*); *ii)* land and natural resources degradation; and *iii)* demographic pressure.

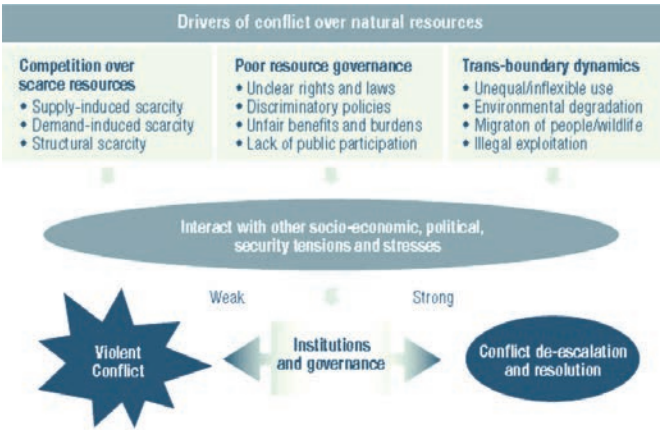
  Global demand for land is unprecedentedly rising, driven by recent food prices crises, growing demand of biofuels and other cash crops, competing uses for land (mineral exploitation, for example) and technological changes. As a consequence, international and domestic investments are sustaining a new rush for land which is taking place especially in poor countries. Where tenure systems are insecure, land management systems are inadequate and institutions are weak, such investments are likely to clash against customary-based uses or not recognized rights of access, leading to inevitable disputes with people and communities already using contested land.

  Land degradation is mainly due to over-cultivation, over-grazing (frequent feature for common pool resources such as grazing land), deforestation and soil degradation. These factors are particularly concerning in poor countries where the occurrence and the magnitude of the effects are larger. Again, it is clear that a weak institutional environment facilitates inadequate management of the resource.

  Finally, world population is fast growing: the world population of 7.2 billion in mid-2013 is projected to increase by almost one billion people within the next twelve years, according to official United Nations population estimates. It is projected to reach 8.1 billion in 2025, and to further increase to 9.6 billion in 2050[6]. Moreover, this process is sustained by the largest wave of urban growth in history. In 2008, for the first time in history, more than half of the world's population will be living in towns and cities. By 2030 this number will swell to almost 5 billion, with urban growth concentrated in Africa and Asia[7]. To satisfy the needs of a growing world population (and the change in the diet with an increasing demand of meat) land is progressively put under pressure due to agricultural/livestock productions and urban resettlement of people.

[6] Population Division UNDESA (2013), *World population prospect: the 2012 revision*, New York.
[7] *Ibidem*.

– ***Political events***. Political settings largely affect land policies and, in particular, the distribution of land access among social groups. For this reason, they should be considered a potential conflict trigger. Land disputes are likely to occur especially when, following structural reforms, tenure system allows emergence of suppressed claims which may canalize ancient resentments.
On the other hand, missing reforms and political vacuums are likely to produce similar effects even if framed in illegal actions. In extreme cases of failed states, with no institutions governing the whole territory and its resources, the probability that contrasting interests and grievances arise is very high.
In general terms, the following figure summarizes the causal relationship between conflict and natural resources, including land. As mentioned before, the interaction with other socio-economic and political stresses contribute to the outbreak of disputes and, eventually, to the escalation of a violent conflict.



Source: UN-EU Partnership, (2012) *Land and Conflict,* New York

The critical crossroads is represented by the strength of (local) institutions and the quality of governance of land resource: institutional presence, structure and functioning may definitely change the outcome of an instable situation.

2.2 *Further challenges in land grievances*

Land grievances may result in overlapping and even contrasting claims which derive from existing (multiple) tenure systems. In poor countries, it is quite common that the legal framework which defines such systems – both formally recognized and traditional – may suffer from unequal recognition of rights and possibilities among different groups. Poor people bear the higher cost because of poor land governance, lack of protection of their rights and corrupt ad unaccountable institutions and may face serious difficulties in demonstrating a legally verifiable claim to land or property. Among them, unequal land access

disproportionally affects women who often are not eligible to hold land rights, inherit properties or access to statutory dispute resolution institutions to defend their rights, as well as require compensations.

In general terms, land rights are accessed through three main institutions: the state, the market or social structures such as the family or community. For each of them, women face with great challenges since they are likely to be systematically discriminated in the possibility to access, have ownership of, and control over land[8]. Moreover, they face substantial challenges in accessing to every above-mentioned institution. For example, in several African countries land administration systems usually register the land rights of men only making impossible for women to claim any land rights. According to International Land Coalition, global estimates suggest that less than 5 percent of all land is registered in the name of women[9]. Thus women, who represent the majority of rural poor and of the labour force in agriculture, are particularly vulnerable and more exposed to the effects of potential disputes. In addition, their limited power in decision-making processes and political representation increase the vulnerability the face with.

The overall impact is large, beyond land access discrimination: without land, women are unable to provide subsistence to their families – especially in rural areas –, secure credit or generate income, thus perpetuating a downward spiral of poverty and vulnerability with regard to potential effects of conflicts.

Other minorities and groups continue to face substantial discrimination with regard secure land rights: among others, a particularly disadvantaged group is represented by indigenous people. There are an estimated 350 million indigenous people in the world and they represent approximately 5% of the total population, yet they constitute 15% of the world's poor[10]. Usually, they do not individually own land, but access it through specific mechanisms of cooperation and customary practice which are rooted in tradition and cultural identity. The general lack of definition of property rights that characterizes open access land (such as grazing land and other common pool resources) and the specific difficulty of indigenous communities to be recognized as having collective rights of access to such resources, makes these populations extremely vulnerable to the risk of being forced to move from the lands they occupy from ancestral times. Moreover, the current increasing commercial pressures on land (*land grabbing*) and the expansion of intensive agriculture for cultivation of cash crops (especially intended for foreign markets), jeopardize and make extremely difficult the survival and maintenance of traditional cultural practices of these people.

Land conflicts between indigenous communities and local governments or foreign/domestic investors are increasingly common. A very interesting case comes from Papua New Guinea: contrary to other this is a country with a

[8] In *"The State of Food and Agriculture 2010-2011. Women in Agriculture: closing the gender gap of development"* report, the UN Food and Agriculture Organization (FAO) incontrovertibly affirms that gender inequalities in access to land is "overwhelming". Report accessible at http://www.fao.org/docrep/013/i2050e/i2050e.pdf.

[9] Anseeuw, W. et al. (2012), *Land Rights and the rush for land: findings of the global commercial pressures on Land Research Project*, International Land Coalition, Rome.

[10] UN Department of Economic and Social Affairs (DESA), 2009.

well-defined legislation on land access which is mainly based on customary land rights with virtual no private ownership. Here, the national development strategy proposed by the government has shifted the main focus on the primary sector, considered scarcely developed and substantially improvable by further investments in the agricultural sector. Within this perspective, the government has recently expressed the need of being more attractive for foreign investments, especially for agricultural purposes. In order to do so, the government has changed the legal framework to make possible acquisitions of land by foreign investors. Thus, the increase of foreign investments in land is a critical component of the development strategy of the country, and there is an increasing debate about the desirability of a development process based on acquisitions of land which may be claimed by indigenous people. However, several problems emerged due to inadequate land governance at local level and mismanagement of the effects that the change in the legal framework has produced on local people, who base their survival on land-related products (forests). The result is impressive since the effort in achieving higher development levels is actually translated in worsening living conditions of the population at local level. As a consequence, several disputes and violent demonstrations over land access have arisen and they undermine social stability and discourage economic opportunities at local level[11].

2.3 *The right to return: the experience of Rwanda*

Conflicts (not only when land-related) or natural disasters are often associated to large-scale displacements of people and refugee flows which commonly encompass transboundary dynamics. Displaced people leave their land and properties; lose the possibility to use a plot of land and their rights – formally bounding or customary-based – over the resource, at least temporarily. Commonly, such land and related resources are then used by other people who take possession of what displaced people left behind.

A major source of disputes occurs once displaced people are able to return to their original land and claim to receive back their past properties, even if a long time has passed since they fled: how is it possible to guarantee the access to land and security of tenure to all actors involved in this kind of situation? The case of Rwanda provides an interesting experience of conflict resolution and a source of reflection for the international community.

As a matter of fact, in Rwanda the scarcity of land in the rural areas and the insecurity of land tenure have been recognized as a leading factor in the outbreak of the genocide in 1994. The genocide produced large-scale flows of forced migrants who tried to escape from the violence. After the collapse of the Hutu-dominated government, roughly 700,000 Tutsi refugees returned to Rwanda. At the same time, up to three million Hutu fled to what was then Zaire and Burundi, many fearing revenge for the genocide, others forced to accompany fleeing Hutu militia. In late 1996 and 1997, roughly two million of those Hutu refugees returned. In that way, Rwanda has experienced the most

[11] For a comprehensive analysis of Papua New Guinea case: The Oakland Institute (2013), *On our land. Modern land grans reversing independence in Papua New Guinea*, Oakland, USA.

dramatic refugee returns of any country in Africa and it is one of the most densely populated countries.
To foster security of tenure and social stability, it is now recognized the value of the principle of restitution. Recently, the principle of restitution has been reinterpreted as an individual right to return to one's home and claim land and property which was abandoned due to conflict. The case of Rwanda is an example of the application of such principle in a very complex scenario, where land access has played a major role also in the outbreak of conflict. Restitution refers to an equitable remedy (or a form of restorative justice) by which individuals or groups of persons who suffer loss or injury are returned as far as possible to their original pre-loss or pre-injury position. When restitution is not possible, it should be provided adequate and fair compensation for the loss of land and property.
The experience of Rwanda outlines the core relevance of land management in achieving a new social stability: it has been established that all offences against property – including land – committed during the genocide are to be solved and traditional courts (the *Gacaca* courts) are responsible of administer informal trials, drawing upon a model of informal law that was used in Rwanda before the development of the formal legal system. They are legal bodies, inspired by tradition. Elders would judge and mediate a solution involving reparations and some act of contrition, if necessary. The *Gacaca* courts have jurisdiction of judging on the destruction and damages to properties, cases of land occupation and denial to access to land, changes in land use. The basic idea is that no reconciliation is feasible whether some kind of restorative justice is not guaranteed.
After the dramatic experience of the mass genocide of 1994, Rwanda has rebuilt a new frame of social stability and reconciliation also on the bases of an ambitious program of land tenure reform that recognized customary land rights as well as equal land rights for women and men.

There are some lessons learnt about the experience of Rwanda in fostering land governance in a post-conflict setting. In particular, it is clear that *i)* the rectification of past injustices, however grievous they may be, can, if delayed too long, undermine efforts to establish security in landholding (see the role of *Gacaca* courts in dealing with such issue); *ii)* people's confidence in their future (in other words, security of land rights) can make an important contribution to peace and reconciliation; and *iii)* peace negotiations should include land access and strategies for establishing the security of landholding in the post-conflict period as a tool to minimize the risk of future land disputes.

3. IMPACTS OF LAND-RELATED CONFLICTS ON DEVELOPMENT

The study of the effects of land titles and reforms have gained a large attention in the literature, while the impact of land conflict is still a marginal issue explored by scholars, despite evidence on increasing incidence of such conflicts. Thus, what we know about the long-term impacts of land conflicts is not definitive. However, there is some evidence about the effects related to their occurrence. In particular, land-related conflicts have a negative impact on productivity: in a case study on Uganda, for example, Deininger and Castagnini (2006) found a

significant impact of conflict on agricultural output – between 5 and 11 percent in productivity losses – which strongly suggests that security of tenure holds a relevant economic importance[12]. Relevant effects are found also in terms of equity since households headed by females and widows – who are likely to be economically and socially more vulnerable due to gender discrimination – face a higher probability to experience land conflicts.

The social dimension, especially in terms of inclusivity, is a major concern when land conflicts arise. As mentioned before, land conflicts are likely to be fuelled by pre-existing social tensions as well as processes of exclusion and group marginalization, since land access reflects the power structure embedded in the society. Given this connection, land conflicts – once not resolved in their root causes – may exacerbate inequality among groups through process of exclusion and, in that way, radicalize potential source of future violent conflicts[13].

An unequitable land access leads to rising levels of inequality among people. Analysing the experience of Latin America in the twentieth century, a recent study by Jensen and Søensen (2012) point toward the significant relationship between land inequality and civil conflict onset: higher levels of inequality in the rights to access to land tend to be associated to higher risk of violent conflict occurrence[14]. It is worth noting that conflict is one of the major causing factors of the so-called "poverty trap": a recurrent path of violence and social instability force poor people in a long-lasting and self-reinforcing mechanism of poverty and lack of opportunities from which is particularly difficult to escape.

Finally, the symbolic value of land deserves to be properly taken into account in analysing the potential effects of land conflicts. Given the spiritual and intangible value that land embeds, evidence suggests that regardless the role of pre-existing tensions, conflicts deeply affect land policies being land a critical source of identity in a society[15]. For this reason, land requires a careful approach by policy makers and aid community since it may forge social dynamics which go behind the access to the resource. Land policies indeed should be enclosed in peacebuilding and development strategies as much as, conversely, they should include specific attention to land grievances in order to reduce the risk of violent conflict.

Since land is progressively subject to increasing commercial pressures – which constitute a trigger for land conflict – it is relevant to explore whether there is a connection between large scale land acquisitions (LSLAs) and the outbreak of land conflicts. Evidence showed by several studies carried out on the issue

[12] Deininger K. and Castagnini R. (2006), Incidence and impact of land conflict in Uganda, in *Journal of Economic Behavior & Organization*, vol. 60, pp. 321-345.
[13] Peter P. (2004), Inequality and Social Conflict Over Land in Africa, in *Journal of Agrarian Change*, vol.4 (3), pp. 269-314.
[14] Jensen P.S. and Søensen T.V. (2012), Land inequality and conflict in Latin America in the twentieth century, in *Defence and Peace Economics*, vol. 23 (1), pp. 73-94.
[15] Pons-Vignon N. and Lecomte H-B. (2004), *Land, violent conflict and development*, Working Paper n.233, OECD Development Centre.

do no lead to conclusive results and provide very mixed results about causal relationships[16].

What seems to be clear is that LSLAs (and land grabbing) is more likely to occur in post-conflict settings where institutions usually are weak and people may be displaced[17]. Cases such as Burundi, South Sudan and Uganda point toward the critical impact of land acquisitions in post-conflict settings since they "(...) *may hamper restoration of the livelihoods of war-effected people, may jeopardize the rights of people who have been uprooted or suffered from military occupation, and may fuel resentment between different groups of population or between them and the state*"[18]. In such conditions, land grabbing events are more likely to occur, facilitated by the presence of weak institutions – the instability and lack of controls support the existence of individualistic economic opportunities for wealth and land titles transfers – and long-term displacement of people, especially in rural areas – the temporary absence of land rights holders make their claims ineffective and facilitate the appropriation of land access by elites and military groups.

4. CONCLUSIONS

Land policies hold a critical importance to sustainable growth, good governance and economic opportunities for poor people, especially in rural areas. Therefore, conflicts over land constitute a major obstacle against development and their occurrence may generate long-lasting effects able to strangle the possibility to escape from poverty. For this reason, solving land grievances and conflicts is critical to achieve a sustainable peace and so, strategies for land conflict prevention and mitigation should be considered of primary interest by government and international aid community.

Moreover, land is often related to other violent conflicts, where it plays a role in reinforcing contrasts and irreconcilable positions of different stakeholders. Since land is an entry-point for addressing violent conflict, it should be part of a more comprehensive approach to be used in prevention of potential violent events and in every post-conflict setting for reconciliation purposes. Thus, land policies should be designed in a conflict-sensitive approach through the recognition of rights and reduction of inequalities in the access to land, with particular attention to most vulnerable people such as women.

It is worth noting there exists a multitude of land conflicts, ranging between very different levels of violence and number of actors involved, so that it is not possible to embrace in a single definition all the possible events. Given this complexity, local conditions matter since they are the characteristic which shape conflict's dynamics and whose knowledge results essential to design a strategy for action.

[16] Among others, see von Braun J. and Meinzen-Dick R. (2009), *"Land Grabbing" by Foreign Investors in Developing Countries: Risks and Opportunities*, IFPRI Policy Brief n.13, Washington; Thaler K., (2013), *Large-Scale Land Acquisitions and Social Conflict in Africa*, Conference Paper n. 22, Food sovereignty: a critical dialogue, Yale University.

[17] Van der Haar G. and van Leeuwen M., (2013), *Post-conflict land grabbing: governance challenges*, Conference Paper, World Bank conference on Land and Poverty, Washington.

[18] *Ibidem*, p. 2.

It deserves to be mentioned also that there is a continuum of land rights and security of tenure: in every society, it may co-exist a multiple set of land rights (sometimes not consistent among them) which uncover the power relationships, including the marginalization of specific groups. Land tenure indeed, involves a complex set of formal and informal rights, related to various rights of access and use. The knowledge of such social structures and relationships is critical to design efficient land policies able to reduce the risk of violence escalation and conflicts outbreak, as well as to promote a more equitable and inclusive management of the resource.

Once a conflict occurred, land management should be used to create a mutual understanding between the actors involved and to re-establish respect and trust among them: since land holds a major meaning of social identity and dignity, its transparent and equitable management should support the construction of a more cohesive and inclusive society. This, the inclusion of land governance as component of peacebuilding strategy in the aftermath of a conflict is a powerful tool to solve pre-existing tensions and contested access to resources.

To conclude, securing equitable land rights for all is a direct support to reduce discriminations and to promote social stability and economic growth. To make land rights effective is necessary a clarification and systematization of the rights of access and use of the resource, as much an accessible judicial system able to protect such rights. In this perspective, the role of reliable local institutions – even traditional ones – is critical in building a legal framework and establishing legitimate and equitable land policies.

PART THREE
Food security and the environment

Food Safety to Promote Food Security

Pier Sandro Cocconcelli[1]
Daniela Bassi[2]
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DEFINING FOOD SECURITY AND FOOD SAFETY

According to the definition given by the World Health Organization (WHO) during the World Food Summit of 2009, "*food security exists when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life*". The concept of food security is built on three pillars[4]:

1. **food availability**: sufficient quantities of food available on a consistent basis
2. **food access**: having sufficient resources to obtain appropriate foods for a nutritious diet
3. **food use**: appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation.

Food security is a complex issue, linked to health (a poor diet can cause several diseases and also the death), but also to economic, social and environmental aspects. **Food availability** is connected to the idea of a "consistent base": food should be available in any period. **Food access** means that the food should be available to all the people within a certain area. Of course, in order to have access to food, it is necessary to have the proper resources: economic, physical and also infrastructural. The third concept, **food use,** is related to ***safety*** and ***nutritional*** issues. Having large quantities of raw materials and food is useless if the food that is produces is poor from the nutritional point of view, or if it contaminated and it cannot be used to feed the human beings. Human beings need safe food: in this sense, knowledge and technology are fundamental: in many areas of the world, there is still not appropriate knowledge on proper crop growing, harvesting, storing, and transportation of food in order to preserve it and avoid contaminations. Regarding the nutritional aspects, it is worth underling that there are countries where, due to economic and social reasons, people use to consume food that is inadequate to conduct a healthy life. The case of Mexico – the country with the highest rate of overweight people in the world – is emblematic. Weather trends in this area are optimal for agriculture; nevertheless, people prefer to consume "junk food": a "rich" food accessible for few dollars per day. This example highlights how diet and nutrition are strictly

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[4] World Health Organization, "Food security". http://www.who.int/trade/glossary/story028/en.

interconnected with environmental, economic and cultural issues, constantly influencing each other.
According to several projections and studies, global population is expected to grow to more than 9.1 million in 2050. This growth will take place particularly in developing countries and urban areas, and urbanization will bring changes in life styles and consumption patterns[5], as shown in fig. 1: an increase in the consumption of meat, sugar, oils, cereals is already occurred and is expected for the next years: it is due not only to the global increase of population, but also to changes in their diets.

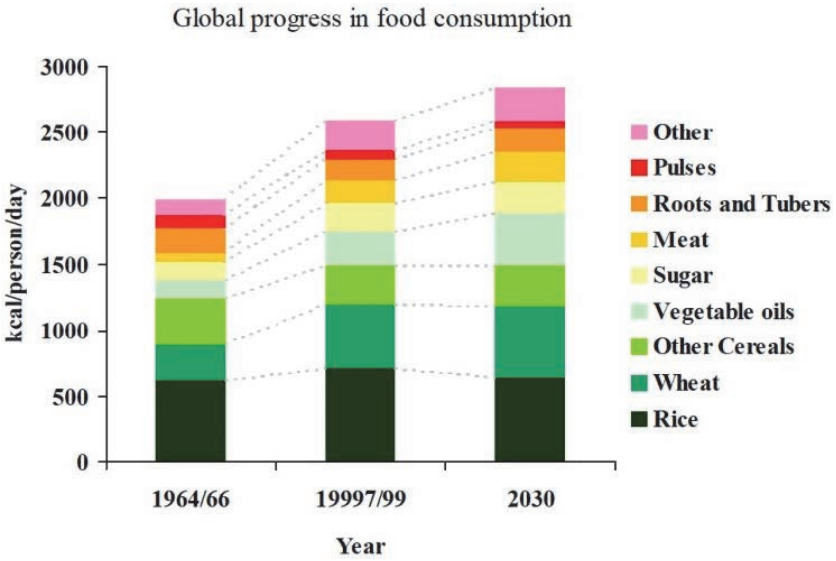


Figure 1: Global progress in food consumption. Source: FAO, 2009

In 1990, the United Nations have launched the "Millennium Development Goals" (MDG), eight development target to be reached by 2015. The first one is about "eradicate extreme poverty and hunger". Although the proportion of undernourished people in developing countries have been halved between 1990 and 2010 and the first MDG is within reach[6], the number of young children nowadays suffering from chronic under nutrition – 162 million[7] – is still unacceptable. Moreover, the objective established by the World Food Summit (halving the number of undernourished people by 2015) will be probably not reached; and it will be quite impossible to meet it, unless we will be able to totally modify our production system.

[5] FAO, 2009. How to feed the world in 2050". Available at: http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf.
[6] FAO, 2014. The State of Food Insecurity in the World 2014".
[7] http://www.undp.org/content/undp/en/home/mdgoverview/mdg_goals/mdg1.

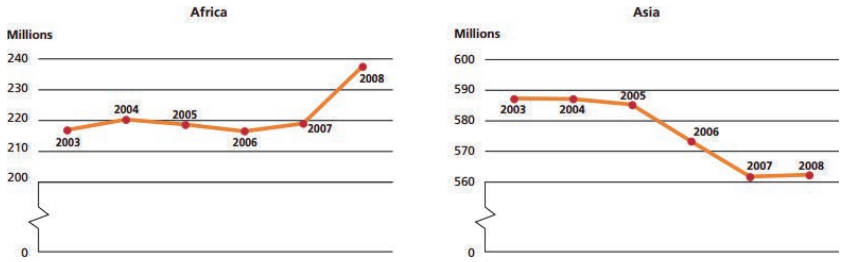


Figure 2: Undernourishment in the world: two very different trends after the crisis. Source: FAO, 2011[8]

It is clear that we need to find answers to the problem of feeding the global population: how the current production systems will be able to feed the world, taking into account the environmental and resource constraints?
Foley et al. (2011) have effectively studied the relationship between the worlds' food security and sustainability needs. Fig. 3 qualitative illustrates a subset of goals agriculture must meet in the coming decades, referring to food security and environmental goals[9].

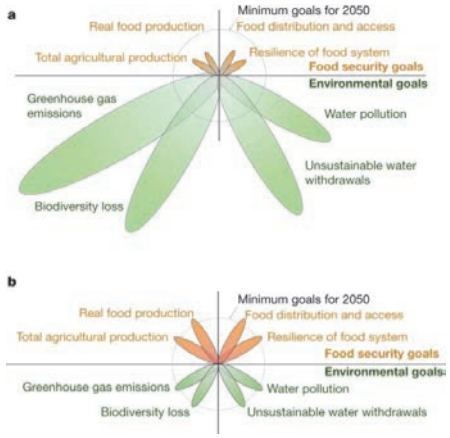


Figure 3: Meeting goals for food security and environmental sustainability by 2050. Source: Foley et al., 2011

At the top, the four key food security goals are outlined: increasing total agricultural production, increasing the supply of food, improving the distribution and the access to food, and increasing the resilience of the whole food system. At the bottom, there are the four environmental goals that must also be met: reducing greenhouse gases emissions from agricultural production and land use, reducing biodiversity loss, phasing out unsustainable water withdrawals and reducing water pollution from agriculture. The study compares the ideal and the actual situations. In the ideal situation, food security and environmental objectives are balanced and the minimum 2050 goals are reached. Actually,

[8] FAO, 2011. "The State of Food Insecurity in the World 2011".
[9] Foley et al., 2011. "Solutions for a cultivated planet". Nature, 478, 337-342.

until recently most agricultural systems have focused on improving food production, often without take into consideration the environmental factors, resulting in an unbalanced situation, in which the pressure on the environment and natural resources are increasing, and food production to be not enough to feed the global population.

As previously highlighted, **food safety** is an essential determinant of the concept of food security. The concepts of food safety and food security are strictly linked: food security, indeed, has quantitative and qualitative dimensions. Food security occurs when there is the availability of **safe** food that means "food that not causes adverse effect to the consumers" (referring to diseases created by contaminants in food).

Fig. 4 clearly shows the factors influencing food safety and security. As said, food security is based on the availability, access and utilization of food. On the other hand, the safety of food needs to be assured in all the phases of food production, from the choice of raw materials to the final storage and consumption of food. The quality of raw materials, the presence of pathogens, processing technologies and, finally, cross contaminations influence the quality of food.

Contaminated food can cause the so-called "food borne diseases": diseases related to food ingestion. There are a number of diseases that can be contracted eating food, due to different causes, natural or related to the anthropic action: mycotoxins, pesticides and agrochemicals residues, antibiotics, metals. **Mycotoxins** are toxins produced by moulds. The general feeling is that moulds in food can be cleaned up from food, as sometimes occurs in jam and cheese; however, in certain products – as cereals – moulds can create very serious diseases, particularly when occurring in a chronic exposure (the quantity eaten of a certain food), they can expose consumers to serious diseases and even cancer. **Pesticides** and **agrochemicals** are used to increase crop production and to reduce pests. Different types of pesticides exist but, in any case, they have to be approved by food safety Authorities: this means that they have been previously tested through toxicological assessment and resulting in a negligible risk for consumer. Unfortunately, there are pesticides still used in the developing countries (mainly because their lower costs) which are extremely toxic and having high persistence. **Antibiotics** are another possible source of contamination. For example, the "chloramphenicol" antibiotic, no more used in clinical due to its toxicity for humans, is regularly used in Indonesia; usually, it is spread on shrimps, to enhance their life and durability. Some years ago, it was discovered that tuna served in Italian sushi restaurants have been illegally treated with a mix of antibiotics including chloramphenicol. And, last but not least, food safety is also deeply affected by environmental conditions. For example, data showed that, in general, in Europe there is a peak in the number of infection during the summer period: certain climatic conditions, as wet and warm weather, can foster the development of pathogens. On the other hand, environmental pollution, caused by the anthropic action, can cause serious contamination, due to the persistence of compounds in land and water used for agricultural production: for example, **dioxin** is a substance produced when wastes are burned, persisting in the environment for years (they are very difficult to degrade).

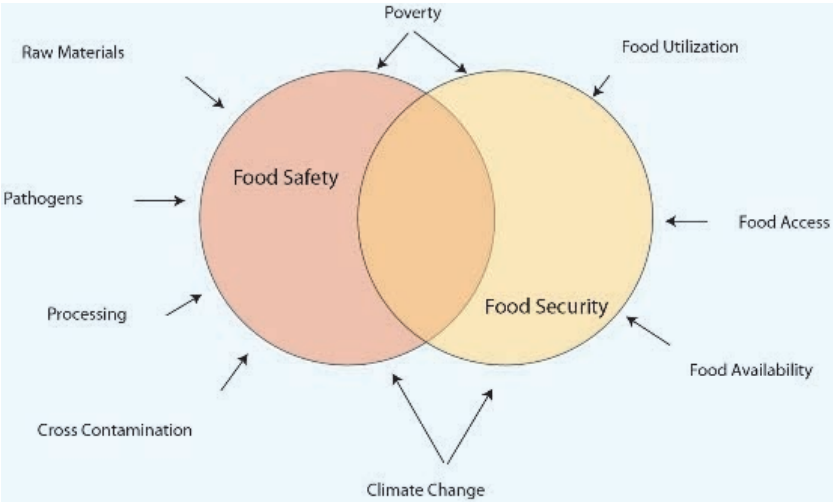


Figure 4: Food Safety and Food Security, Nature, 2012

Despite food safety and food security are different concepts, they are strictly interconnected, as shown in fig. 4. Food safety and food security influence each other and are influenced by common factors. Poverty – scarcity of food and not unavailability of resources – can lead people to consume any food they find, even if this is not safe. Climate change is widely recognized to have a serious impact on the availability of natural resources, necessary for food production; moreover, peculiar climate conditions can enhance the development of pathogens, mycotoxins and parasites.

Without any doubt, both the concepts are essential for hunger and poverty reduction, and incidental to the achievement of sustainable agro-food systems.

THE EUROPEAN UNION APPROACH TO FOOD SAFETY

Before starting to analyse European Union approach to food safety, it is fundamental to highlight the difference in the concepts of **hazard** and **risk**. The **hazard** is the undesirable event for the person, the way in which an object or a situation may cause harm. The **risk** is the likelihood that a person may be harmed or suffers adverse health effects if exposed to a hazard: the extent to which the likely recipient of the harm is exposed to – or can be influenced by – the hazard. Thinking at the food system, we eat food every single day, hence we are exposed to a risk; however, this risk is strictly related to the quantity of a certain food that is eaten. Raw horse meat, for example, can contain a small warm causing infections, called Trichinella (similar to Thenia): but if a person does not like raw horse meat, his risk is zero.
The European Union approach to food safety aims to ensure a high level of food safety: it is possible to state that the risk for European consumer is negligible. Unfortunately, in other parts of the world (particularly in developing countries) the risk for the consumer is still extremely high. The cancer caused by the

consumption of mycotoxins in cereals, developed due to not proper storage, is probably one of the leading causes of death in Africa. Cross contaminations (the physical movement or transfer of harmful bacteria on food from other food, surfaces, hands or equipment), that can be avoided in developed countries thanks to the implementation of proper "food-plans" along the overall food chain, are very difficult to control in situations characterized by very poor hygienic and social conditions. In all these cases, it is important to highlight that, in order to reduce the risks, it would be enough to implement simple and basic tools for food control. Proper silos, for example, could be sufficient to ensure proper storage and avoid the production of mycotoxins in food.

In 2000, Europe has decided to practically apply a theoretical model, developed by WHO and FAO, the **risk analysis model**, a multidisciplinary tool that joints together several professional profiles: scientists, economists, legal experts and communicators in three different areas of risk analysis. The scientific experts are in charge to define the risks' dimensions: this is the risk assessment phase, science based. They deliver scientific advice for Europe's decision-makers in the areas of food and feed safety, nutrition, animal health and welfare, plant protection and health. This is the risk management phase, policy-based. The third area is the risk communication phase, built on the interactive and continuous exchange of information and opinions concerning the risks. The three different areas are managed by different figures: scientist and experts organized under the umbrella of the European Food Safety Authority (EFSA), and the risk managers for the risk management. In Europe, risk managers are the European Commission, the Member States (up to national Ministry of Health down to the food inspectors); the risk assessors are members of the scientific community. It is important to highlight that "food safety" is related not only to food, but to everything connected with its production: hence, the European Union adopts an integrated approach to food safety, monitoring all the phases and the elements connected with food production and consumption: plant health and protection, animal feed and health, consumers protection (including nutritional and health claims, novel foods, additives etc.), and also environmental risk assessment[10].

[10] European Commission, 2014. "Food". http://ec.europa.eu/food/index_en.htm; EFSA, 2014. http://www.efsa.europa.eu/en/topics.htm.

Figure 5: The Risk Analysis model. Source: adapted from FAO/WHO, 1995.

FOOD SAFETY: GLOBAL APPROACH FOR GLOBAL RESPONSIBILITY

The latest available data from EFSA-ECDC report that, in 2012, in the European Union there have been about 24 deaths over almost 500 million of inhabitants, 5,118 hospitalizations and 5,363 episodes of outbreaks: not really alarming numbers, if we compare them with data reported for developing countries. Intoxications from food are one of the main causes of a low expectation of life in certain regions of emerging and developing countries. In a village in Africa, in a favela in Brazil or in a slum in India, where hygienic conditions are hard, food diseases can be one of the first causes of death. Every year, hundred thousands of children died for E. coli infection: diarrhoea, a quite simple problem for a healthy person, can be extremely dangerous for children. Data from FAO Africa report that, every year, every single child can experience five episodes of diarrhoeas that can cause serious diseases and also death. The estimated annual mortality rate for diarrhoea is around 700,000 in the sub-Saharan Africa. Definitely, these diseases could be often managed just improving basic hygienic conditions.

It is possible to state that Europe has developed one of the best on-going system for food risk analysis: but can we wrap ourselves in cotton wool, thinking that – thank to our perfect system – we are safe from any food risk, without caring of what happens in Countries belonging to Latin America, Africa or Asia? Obviously not: our food systems are totally interconnected, and recent contaminations episodes can demonstrate it.

In 2011, a novel strain of Escherichia coli O104:H4 bacteria caused a serious outbreak of foodborne illness in Germany, mainly focused in the Hamburg region. E. coli is a bacterium of the genus Escherichia that is commonly found in human lower intestine (actually they are an important part of the healthy human intestinal tract). Most E. coli are harmless, but some strains are pathogenic and can cause serious illnesses. One of those, called Enterohemorrhagic E. coli, is one of the worst micro-bio-organism: just ten cells are able to cause serious diseases. In 2011, in Germany, about 5,000 consumers were hospitalized due to an E. coli infection, including a high proportion of women aged between 30 and 50. Causes of the infection were difficult to detect; moreover, it was quite surprising the high percentage of women afflicted by the illness: usually, this microorganism is an issue for children, kids and young humans; moreover, it

was never seen before such a difference between men and women. Since, at the beginning, the cause was identified in cucumber from Spain, the immediate reaction was to ban all the imports of vegetables from Spain. Later, it appeared that the outbreak was caused mostly by contaminated sprouts of fenugreek (a small bean produced, in this case, in the Nile Valley) from Egypt. The high percentage of sick women was due the fact that sprouts are often eaten in salads, and in the Hamburg region there is a high percentage of vegetarian women. In order to protect its consumers, the European Union banned the imports of organic sprouts from Egypt. This episode clearly highlights the strict connections between Countries and the implications on food safety. On the one hand, despite Europe has strict controls on food, contaminated sprouts arrived from Africa, causing several illnesses and hospitalizations. On the other hand, the European ban on imports have created serious economic problems to Egypt, particularly considering that, in the last ten years, several small farmers in this area of Africa have turned their agricultural production into organic ones, mainly for the European market. Hence, international trade is highly affected by the quality of food and regulation on food safety; and this is very important if we consider that Developing Countries' economy relies much on export towards European Countries, where food safety standards are quite strict[11].

It appears clear that food safety cannot be managed only at the local level. Beside national and European authorities, there are different supranational organizations working to ensure consumer protection at an international level. The **World Health Organization (WHO)** is the directing and coordinating authority on international health within the United Nation's system. WHO is organized has Regional Offices (e.g. WHO African Region, WHO European Region etc.). An overview to the Regional Offices' website allows understanding the differences in food safety issues and priorities all over the world. For example, in Europe, tackling antibiotic resistance from a food safety perspective is a hot topic. The WHO African Regions' website, instead, highlight topics as "hand washing and food safety": a basic issue for a European citizen, but not so banal in developing countries. Proper hand washing can radically decrease the number of infections: it is often astonishing to meditate on the fact that delivering very basic information and implementing low-cost solutions can save human lives. To wash hands, to use very basic protective devices (as rubber gloves), to implement simple but effective solutions to store food (as silos) and avoid contamination: these are some examples of simple and cost-effective solutions that can enhance the food safety level.

Despite the greater focus on the topic of food security, also the **Food and Agriculture Organization (FAO)** have some interest in food safety. However, it should be pointed out that the concept that food safety is fundamental for food security sometimes seems to be not very recognized. Present situations show that to massively increase the production cannot be the unique solution to feed the greatest number of individuals: lack in proper storage solutions, for

[11] Particularly, Africa is expected to be the next "food producing area" of the world; this explain why China is buying lot of lands in the continent, giving origin to the phenomenon of "land grabbing", a term used to describe the purchase or lease of large tracts of fertile land by public or private entities.

example, will lead to discard contaminated food, enhancing the problem of food waste. So, it is clear that a changing strategy is required.
Finally, **JEFCA** is a joint FAO/WHO Expert Committee on Food Additives, composed by international experts to evaluate the safety of food additives, processing aids, flavouring agents, residues of veterinary drugs, contaminants and natural toxins[12].
The several areas covered by the work of these organizations highlights, once again, as food safety is a complex topic, related not only to the simple food that we consume in everyday life, but to everything that is somehow linked with its production and consumption: from the quality of raw materials until the materials used for packaging and the delivering of food to the final consumers.

FUTURE CHALLENGES FOR FOOD SAFETY AND THE IMPACT ON FOOD SECURITY

It is evident that it is not possible to reach the goals of a sustainable development of agro-food systems without considering the role of food safety. This is true for several reasons: first of all because, as previously highlighted, food security has quantitative, and also qualitative dimensions: enhancing the level in food production is not useful if systems to protect food from contaminations are not effectively implemented.
It is fundamental not to forget the impact of food safety on waste: contaminated food, indeed, cannot be consumed and must be discarded. An interesting report produced by FAO[13], analysing causes for global food losses and wastes, identifies microbial and chemical contaminations as one of the main causes that generate, every year, about 1.3 billion of food waste. And finally, there is the "economic dimension" of food safety, considering the amount of food that cannot be trade if contaminated or not responding to food safety standards.
The necessity to feed an increasing global population (and the high pitched debate on GMOs, sustainable intensification of agriculture etc.), the globalization of trades and the economic implications of food safety regulation, the new emerging trends in food consumption patterns (for example, the spread of informal food trade also in developed countries, or the habits to consume raw food) are posing big challenges to global food safety.

In the previous section, it has been highlighted as an effective "risk analysis" model – as the one implemented by the European Union – has to be based on science and policy. Hence, effective solutions will necessarily come from the integration and the dialogue between different disciplines.
On the one hand, scientific research and technology play a fundamental role in ensuring the highest level of food safety and consumer protection. It is quite surprising to notice that, in many cases, it would be enough to spread very basic hygienic practices (e.g. proper hand washing) or to implement basic technological solutions (e.g. building proper silos to store food) to save many

[12] http://www.fao.org/food/food-safety-quality/scientific-advice/jecfa/en.
[13] Gustavsson J., Cederberg C., Sonesson U., Van Otterdijk R., Meybeck A., 2011. "Global food losses and wastes". FAO, Rome.

human lives. And we should bitterly admit that, in many cases, there is not a great awareness about this.
On the other hand, from the side of public policies, first of all it is important to highlight that many countries (particularly developing ones) do not have an infrastructure that is capable of recognizing and reacting to food-borne problems. One of the biggest problems to tackle is to improve the quality of the food borne diseases surveillance system: data are fundamental to develop systems, at the national level, that can collect data, allowing the adoption of intervening measures to reduce the risk. Unfortunately, only a small proportion of food borne illnesses come to the notice of health services, and even fewer are investigated, particularly in developing countries, where poverty and lack of resources for food safety management and food control services do not allow to effectively measure the incidence of illnesses.
Additionally, in many countries food safety legislation may be absent or rudimentary and fragmented (in this sense, building a sound national food safety legislation could be a critical point, particularly when considering the importance of global trades safeguarding, at the same time, local traditions and habits). Also, some developing countries are unable to participate in international bodies, such as the *Codex Alimentariu*s Commission and the World Trade Organization (WTO). And finally, food safety personnel are often scarce and not properly trained.

In this framework, it is important to stress the role of communication of risk and consumer education. An important topic to tackle with is the problem of the **consumers' perception versus scientific evidences**. The emerging of new "food trends", accompanied by an amount of information – not always correct – spread by mass-media, are resulting in behaviours increasingly guided by individual perception rather than scientific evidences. For example, consumers are increasingly interested in buying "healthy" food, hence they commit themselves in buying food from "short supply chain" (or "zero-mile"), organic food etc.; actually, this willingness to consume healthy food contrast with the persistence of wrong behaviours and habits, as consuming raw fish and meat, or preparing food at home without caring of risks for cross contaminations. Moreover, risk communication tools should be improved, in order to avoid the spread of partial or even wrong information, resulting in irrational behaviours that can seriously damage local economy.
A key point in developing more effective food safety systems at the global level is to joint together experts coming from the different area of the world and to mix different competencies in a multidisciplinary approach. As effectively written by Van de Venter (2000)[14], "emerging food-borne problems will not be solved by individual countries acting in isolation, no matter how high their level of expertise and food control".
The risk analysis model implemented at the European Union, which efficacy is demonstrated by the low number of food-borne diseases reported, can be a very good example to be imitated by other countries. Particularly, the "farm-

[14] Van de Venter, T. 2000. "Emerging food-borne diseases: a global responsibility". Food Nutr. Agric., 26: 4-13.

to-fork" concept should be enhanced by building safety into the production, handling, processing and storage of food.
"We have been created not to live as brutes but to follow the virtue and the knowledge", wrote the Italian poetry Dante Alighieri. For a researcher, this "knowledge" is the science: science can be a powerful tool to face the challenges for food safety and food security, to improve the quality of life, to reduce hunger and poverty and, definitely, to ensure that the goals of a sustainable development could be reached. At the same time, effective food safety systems cannot be developed without integrated and coordinated approaches, based on the continuous dialogue and cooperation between all the stakeholders in the food chain. Only pursuing a similar approach, it will be possible to develop real sustainable agro-food systems.

Reducing Food Losses While Protecting Human Health and Environment

Vittorio Rossi[1]

This contribution, with special attention to European agriculture, aims to present the definition of food losses and waste and their link with human health (1), discuss the main reasons of such losses (2), and explore the role of pesticides which are currently extensively used as a protection measure to reduce crop losses (3), and analyse possibilities for a sustainable use of pesticides (4).

1. FOOD LOSSES AND WASTE: DEFINITION AND KEY FIGURES

The high level panel of experts on food security and nutrition settled within the Committee on World Food Security of the Food and Agriculture Organization (FAO) defines Food Losses and Waste (FLW) as

"a decrease, at all stages of the food chain from harvest to consumption, in mass, of food that was originally intended for human consumption, regardless of the cause" (HLPE, 2014).

In this analysis, it is fruitful to distinguish food losses, which occur before consumption, from food waste, which occur at consumption level, since they are correlated to different causes and response strategies (Fig. 1). This contribution especially focuses on food losses.

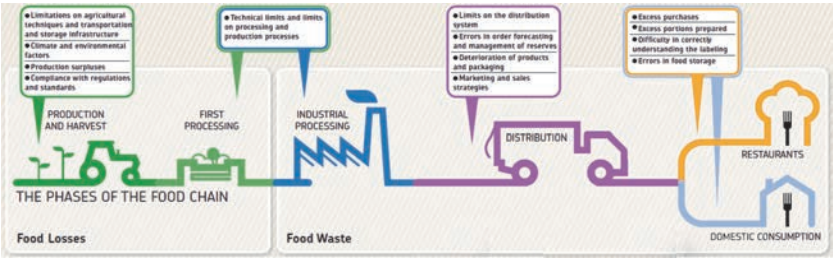


Figure 1. Food losses and food wastes (from Barilla Centre for Food & Nutrition, 2012)

[1] **Vittorio Rossi** is professor in plant pathology at the Faculty of Agricultural, Food and Environmental Sciences at the Università Cattolica del Sacro Cuore in Italy. His main research activity concerns the study of plant pathogens, with particular attention to biological, ecological and epidemiological aspects, as well as crop losses caused by pathogens. Prof. Rossi is Member of the Epidemiology Subject Matter Committee of the International Society for Plant Pathology (ISPP) and of the Plant Health panel of the European Food Safety Authority.
The author acknowledges Mr. Marco Daprà (UCSC) for assistance in the elaboration of this contribution.

It is also relevant to consider any possible variations in food quality, which may impact as well on nutrition. The high panel recognizes the significance of Food Quality Losses or Waste (FQLW) which refers to a

"decrease of a quality attribute of food (nutrition, aspect, etc.), linked to the degradation of the product, at all stages of the food chain from harvest to consumption" (HLPE, 2014).

Thus, considering the definitions of FLW and FQLW, it is possible to distinguish between losses in mass (so in quantity) and losses in quality (so in relation to different aspects of food quality).
The Food and Agriculture Organization (FAO) estimated that the amount of food loss and waste produced every year broadly corresponds to one third of the food produced in the world (one quarter if we measure it in calories)[2] (HLPE, 2014). The amount of these losses is not the same all over the world (Fig. 2): it largely depends on the products, local conditions, and at what critical stage of the food chain these losses occur. In middle and high income countries, most of the losses occur at the distribution and consumption level (so at the end of the food chain); in low income countries, losses are likely to be concentrated at the production level (that means in the field) and during the post-harvest period. Regarding the last case, growers are the main responsible for these losses since they mainly rely on the management of cropping and harvest activities.

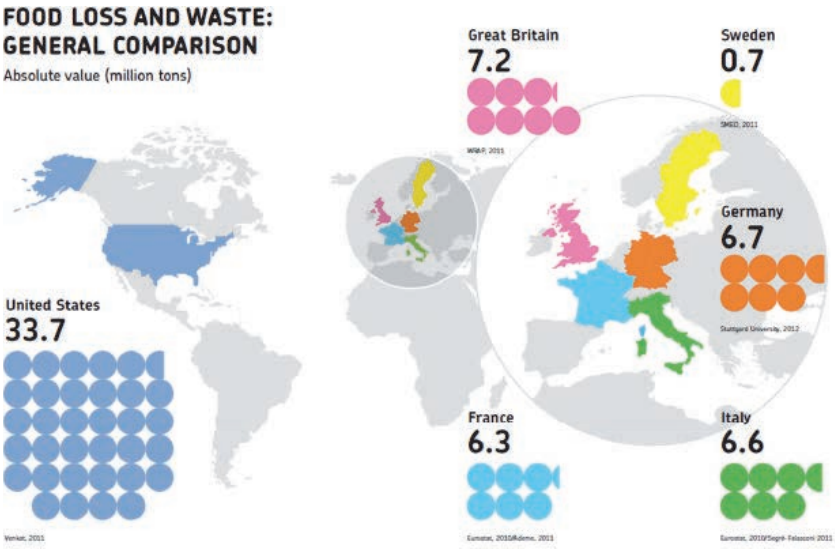


Figure 2. A world comparison of food loss and waste (from Barilla Centre for Food & Nutrition, 2012)

[2] For simplicity of the text, we refer to both food loss and waste as "losses".

These losses impact on the availability of food at both local and global level, thus they directly affect food access and food security. The effect is even larger: as the high level panel concludes, food losses and waste impact both on food security and nutrition as well as on the sustainability of the food system itself (HLPE, 2014). The multidimensional nature of the impact – economic, environmental and social – calls for a systematic approach in order to mitigate such negative effects.

From an environmental point of view, food losses generate major impacts such as greenhouse gas emissions, soil degradation, waste of water resources and unsustainable energy consumption. Only in Italy, fruits and vegetable which are thrown away at some point of the sale process, involve the consumption of over 73 million cubic meters of water every year (Barilla Centre for Food & Nutrition, 2012). The following figure (Fig. 3) represents the economic impact of food waste in different sector of agriculture in Italy, estimated according to the production cost and the market price of goods: as the figure clearly shows, Italy faces, every year, very high economic impacts deriving from food waste.

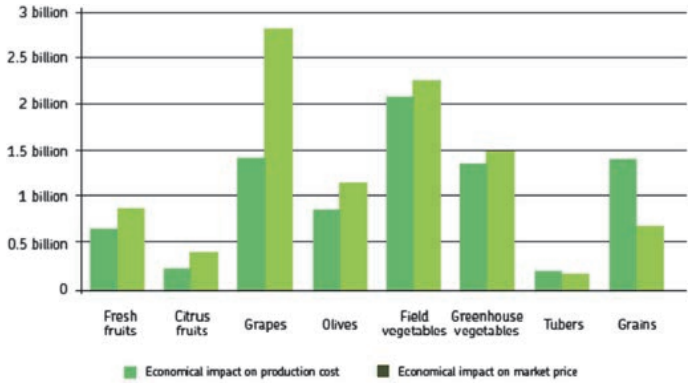


Figure 3. Economic impact of food waste in Italy, by agricultural sector, estimated according to the production cost and the market price of goods (from Barilla Centre for Food & Nutrition, 2012)

Another example of environmental impact comes from the analysis of the total carbon footprint, which means the amount of carbon used for producing a particular food item. The following figure (Fig. 4) shows the total carbon footprint at the household consumption stage in Great Britain for the main food categories: the higher is the carbon footprint, the higher is the impact of the production of that particular food on the environment. The green bars represent the carbon footprint associated to food waste: these amounts could have been avoided by using more efficient processes to reduce food waste. The light green part of the bars indicates the avoidable waste which thus constitutes the additional negative impact on the environment.

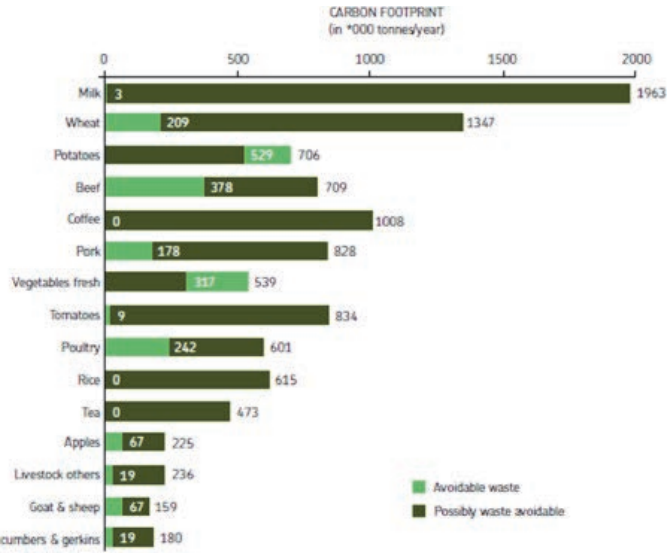


Figure 4. Total Carbon Footprint of waste at the household consumption stage in Great Britain for the main food categories (from Barilla Centre for Food & Nutrition, 2012)

There are also economic impacts such as the lost value of wasted food or the cost of negative externalities which may have been produced. On average, the food wasted by a family composed by four members in the US would have been more than sufficient to feed a family in a developing country.

Finally, food losses bring also ethical and social impacts since the presence of food losses and waste of nutrients challenges the right to food for others, making more difficult the access to food and generating nutritional deficiencies. Moreover, the effects of climate change on agriculture – just think about land degradation, stress to water, soil and biodiversity – may increase the social impacts on crop productions, nutrient quality and thus on nutrition, by weakening immunity capability and affecting human health, especially for the poor. The main consequence is the generation of long-lasting vicious circles where poverty, poor agriculture and unhealthiness are mutually reinforcing elements which even feed environmental stresses and reduce human health, in particular as regards infectious diseases.

Figure 5 provides a graphical explanation on the possible paths of relation between environment, agriculture and infectious diseases, like malaria and dengue.

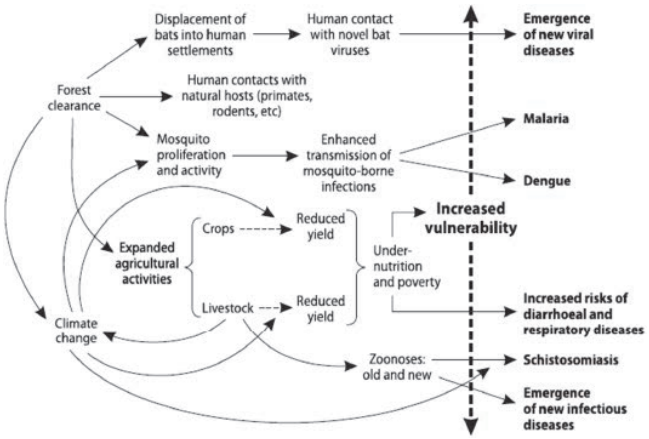


Figure 5. Paths between environment, agriculture and infectious diseases (from WHO, 2013)

2. ACTUAL YIELDS, POTENTIAL PRODUCTIONS AND PESTS

As already explained, food loss and waste can occur along the full food chain: from the production field level (that means at crop level) to the consumption level. In this contribution, we mainly focus on food losses at the crop level: as general perspective, in this analysis and data, crop losses (food losses at the crop level) are underestimated, because this evaluation is mainly based on actual yield and not on potential crop production (Fig. 6). A huge difference may exists between actual and potential crop yield.

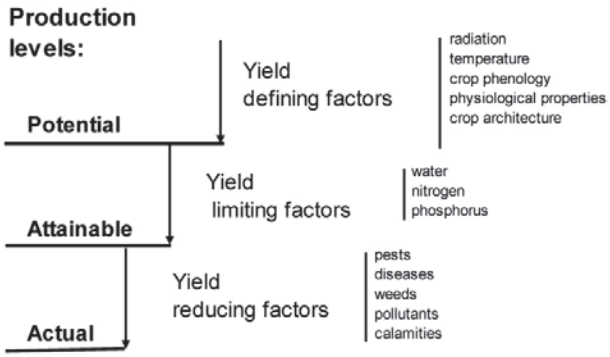


Figure 6. Relationships among potential, attainable and actual crop yields and growth-defining, growth-limiting and growth-reducing factors (Rabbinge, 1993; van Ittersum and Rabbinge, 1997)

There are many cases where a potential crop production is much higher than actual yield because there are limiting factors (such as scarce water supply or availability of nutrients such as nitrogen or phosphorus. For example, if a farmer is producing corn in a very high productive area, his expectation about corn production is reasonably high. However, if during the growing season there is a lower amount of rainfall than expected, the potential production may

run from 100% to, for instance, 80% because of water stress. Other factors may also apply in reducing the production respect to the potential one. For instance, insect pests and diseases are likely to attack crops and they further reduce the production level, for instance by about 20%. Thus, the farmer is able to collect an actual yield which corresponds only to 60% of the potential one because of thee limiting factors. It is straightforward to state the importance of reducing such factors, in order to achieve as much as possible potential yields. Yield reducing factors are considered to be the cause of crop losses.

Crop losses can be caused by abiotic factors (irradiation, low water supply, low or too high temperature) and by biotic factors or pests (i.e., any species, strain, or biotype of plant, animal or pathogenic agent harmful to plants) (Oerke, 2006). Figure 7 represents the general relationship between pest population density and crop yield: when the pest population increases, the yield decreases as the pattern shows, with the occurrence of associated crop losses. The best way to reduce crop losses due to pests is to reduce the pest population density. There are different crop management actions able to reduce the pest population; these actions are called "Pest control" or "Pest-management" actions.

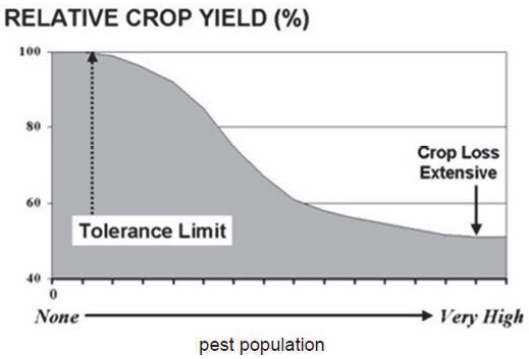
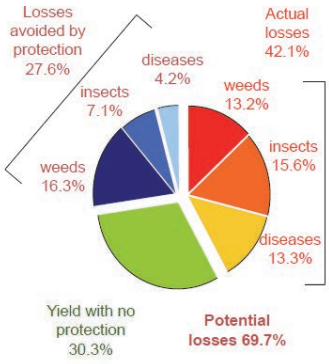


Figure 7. Relation between pest population and crop yield

Based on FAO estimates at global level, Africa and Asia are the world regions where actual food losses are higher (around 42%) even if more advanced agriculture systems, such as in Europe, still register a relevant amount of food losses (25%). The actual losses considerably change among different areas of the world: generally speaking, they are lower in developed countries and higher in developing countries. The difference is due to many factors: investments, availability of certain chemical products and growers' skills. Figure 8 shows losses by cause and world region; the actual yield with no protection against pests would be no more than approximately 30%: that means we may eventually lose about 70% of the potential yield due to pests at global level. Actual losses (42%) are lower than potential losses (70%) because of the positive effect of crop protection: it means that, by using crop protection actions, we are able to reduce potential losses by almost 28%. When exploring the main actors of crop losses, we mainly find weeds (plants into the

crops), insect pests and diseases (caused by fungi, bacteria, viruses and other pathogens) which individually account from 13% to 16% of these actual losses.



Area	actual losses
Europe	25%
Oceania	28%
Nord & central America	29%
USSR & China	30%
South America	33%
Africa	42%
Asia	43%

Figure 8. Potential and actual food losses at global level (source, FAO)

Crop losses depend also on the specific crop: comparing, indeed, different crops at the base of global diets, such as rice, maize, wheat and barley, rice is more exposed to both actual and potential losses respect to others crops (Oerke, 2006).

3. THE USE OF PESTICIDES AS PESTS MANAGEMENT ACTION

In order to reduce crop losses it is necessary to improve the crop protection measures adopted. As Figure 9 shows, Pest Management actions account for more than 50% of the reduction of potential losses: their contribution as crop protection measures, indeed, including the use of pesticides, is of primary relevance. In addition, almost one third of the effect of losses reduction is provided by the use of pesticides.

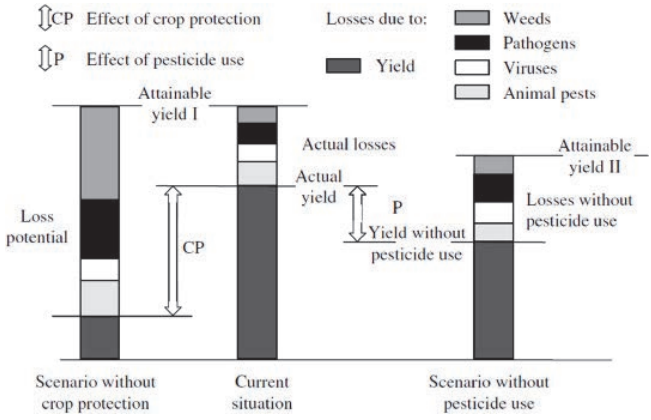


Figure 9. Effects of crop protection on crop losses and yield levels (from Oerke, 2006)

In the US, for example, each dollar spent in the provision of pesticides to control pests, returns about 4$ in protected crops, suggesting the opportunity of using pesticides to achieve additional value for protected crops. On large scale, every year in the US 40$ billion are saved because of the use of pesticides (Pimentel, 2005). The use of pesticides is the most powerful pest-management action we have to control pests and for this reason the market of pesticides has considerably increased over the last decades. The relationship between the yields of some cereal crops (wheat, maize and rice) and the pesticides sales suggests the existence of a positive correlation on the long run (Fig. 10).

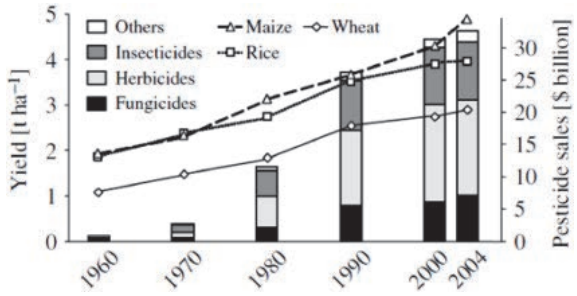


Figure 10. Development of the worldwide average yield per unit of area for wheat, rice and maize and pesticide sales in the period 1960-2004 (from Oerke, 2006)

However, not every region in the world adopts the same use of pesticides, due to different agricultural strategies, legal frameworks or capability to access to pesticides' market. Such regional differences in the access and use of pesticides can explain a considerable component of the reported disparity in actual crop losses.

There are also differences within the same regional area: for instance, in Europe the use of pesticides experiences large variations in different countries. France, Italy and Spain – characterized by large agriculture sectors – cover more than 50% of the total amount of pesticides used in all Europe. Among them, however, there are relevant differences: whereas France accounts for the 33% of the total European amount, Italy and Spain do not exceed 15% (source http://faostat.fao.org/). The amount of pesticides used to protect crops also changes depending on the crops: pesticides, indeed, are used more to protect fruits, vegetables and cereals rather than other crops.

A very huge and constant increase in the use of pesticides has been reported since the end of the Second World War: in that period the first modern fungicides were introduced into the market and the growers were convinced that the regular use of pesticides would protect the crops in a very easy cost-effective way. In those years the cost of pesticides, compared to the associated gain, was irrelevant and growers sprayed them on weekly basis for several months a year (Russel, 2005).

However, this massive use of pesticides in a short time was not unproblematic, rather causing several negative consequences: the first problem was that pests became resistant to pesticides. Growers realized that the massive use of pesticides could have not been the solution: indeed the resistance of pests would have grown steadily during the years. In general terms, the massive use of pesticides creates relevant negative impacts in three different areas: at the agricultural level, at the environmental level and diseases for human health (Pimentel, 2005).

At the **agricultural level**, the massive use of pesticides is likely to create four main problems:

- Pesticides can be toxic for the crops and create crop losses.
- The destruction of natural predators or parasites of the pests: in a natural environment there is equilibrium between pests and their enemies. The use of pesticides to control pests also affects the biodiversity and the efficiency of the system in regulating the pest populations: the paradoxical result is that we have to continuously use pesticides because the natural enemies' population is lost.
- The susceptibility of honey-bees and pollinators in general: there is evidence on the negative effect of pesticides on honey-bees. The reduction of honey-bees is a huge problem because many crops are pollinated by them and less pollination may mean a reduced crop yield.
- New and re-emerging pests not controlled by the specific pesticides used in the crop.

At the **environmental level**, both "point-source pollution" and "non-point-source pollution" can be caused by the use of pesticides.

The "point source pollution" refers to a contamination coming from a specific identifiable place: for example, it may be produced by the accidental emission of the pesticide during the preparation of the mixture, inefficiencies of the tank or the sprayer, the presence of spills and drips from the machine cleaning up. Once emitted, these chemicals go into the soil and the ground water, leading to serious negative impacts.

On the other hand, the term "Non-point-source pollution" refers to a contamination not coming from a specific area rather from a wide one. For example, when a pesticide is sprayed, part of the product does not reach the target and it is dispersed in the surrounding environment as "drift". It is estimated that in grapevine cultivation, for instance, the target crop is reached by no more than a quantity ranging between 19% and 56% of the total sprayed pesticide, whereas a quantity between 30% and 60% goes to the soil, 10% to 15% is lost in the air during sprays, and 4% to 6% is lost in the air after sprays. In other words, a relevant part of sprayed chemicals does not reach the crop target and, at the same time, increases environmental pollution while not protecting the crops.

Moving from environmental to **health effects**, everyone may be exposed to pesticides in several ways by ingesting the chemicals (e.g., by eating some crops with pesticide residues), by drinking contaminated water or by

the proximity to the drift location in rural areas. In addition, environmental pollution by pesticides has an impact on the natural life of the soil, water, wild vegetation areas and, as a consequence, it has also an impact on human health. We have to consider, indeed, that pesticides are toxic substances for pests but also for humans, with different levels of toxicity.

Generally, it is possible to distinguish an exposure deriving from work activities (for example, growers and people working in the chemical industry or involved in the transportation and storage of the pesticides as well as in their distribution) from an exposure deriving from the use of crop products or from living rural locations. In both cases, the toxicity of these chemical products depends on the exposure to the risk that means the frequency and duration of the exposure. Moreover, the pesticides' residues on the crop surfaces may vary and they can be reduced by external factors such as rain, light degradation or plants' metabolism. As regards the toxicity deriving from crop products eating, it is clear that it mainly depends on two factors: on the amount of pesticides' residues on the plant product, and on how many products from that particular crop are consumed and with what frequency. In other words, the risk of pesticide residues on crop products depends on growers' activities, but also on consumption attitudes[3].

The European Commission has defined a maximum residue level (MRL) for each active ingredient which may be used for crop protection. It means that if a food item has a pesticide content higher than this limit, it cannot enter into the European market. Giving the existence of such legally bounding limitations, food items should be safe respect to chemicals within all the European market. These provisions are enforced by controls at different stages of the food chain in order to verify the real compliance with the maximum admitted residue level.

However, there are reasons to have a precautionary approach to the pesticide residues in food. The MRL is calculated based on the response of chemical treatments on small animals (on rats, for instance). The first shortcoming derives from using data related to small animals in order to infer potential toxicity of pesticides for humans. In addition, these data are collected in experiments conducted with only one toxic component at time and there is little information about the combined effect of active ingredients of pesticides (EFSA, 2008). When an European consumer eats a fruit, for instance, she/he could eat 10 or 20 different pesticide residues; such fruit is correctly placed into the market because each of these chemical residues do not exceed the legal MRL, although it is unclear what could be the combined effect of this compounds on our health.
Facing an increasing demand for food safety by domestic consumers, retailers are progressively asking for reducing the number of chemical residues in the food products.

[3] There are different patterns of exposure; the most important are ingestion through food and beverages, inhalation and skin contact.

The following figure (Fig. 11) illustrates some data about pesticides residues on food items. These data come from an official network working at the EU level where each European country indeed is obliged to perform a certain number of controls on food items. The European Food Safety Authority (EFSA), then provides analyses of these data and support the dissemination of public results through the EFSA web site (http://www.efsa.europa.eu/). For instance, in 2006, 60.477 samples were totally analysed in the 28 member states. The analysis revealed that 51.5% of these samples (concerning food commonly consumed) did not contain any detectable pesticide residues. Almost 44% reported residues were not exceeding the legal limit (that means they are considered safe by the European legislation) and less than 5% of the total sample did not comply with the legal limitations by presenting residues higher than the MRL or not permitted for that particular food item.

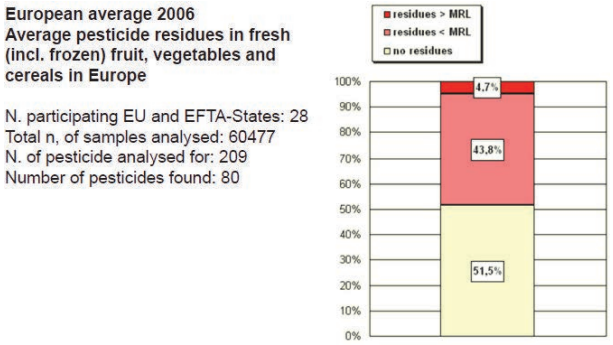


Figure 11. Average pesticides residues in fresh fruit vegetables and cereals in Europe (source EFSA)

Comparing the compliance to such regulation by Italy and by European member states (on average), a clear improvement of the Italian capacity to control and monitor the chemicals residues in food items emerges across time (Fig. 12). In early 90s, Italy was above 5% of non-compliance, whereas today Italy reports that just approximately 1% of samples result not respecting the current regulation. Nowadays Italy seems to be more efficient in controlling the use of pesticides than the average of the European community members.

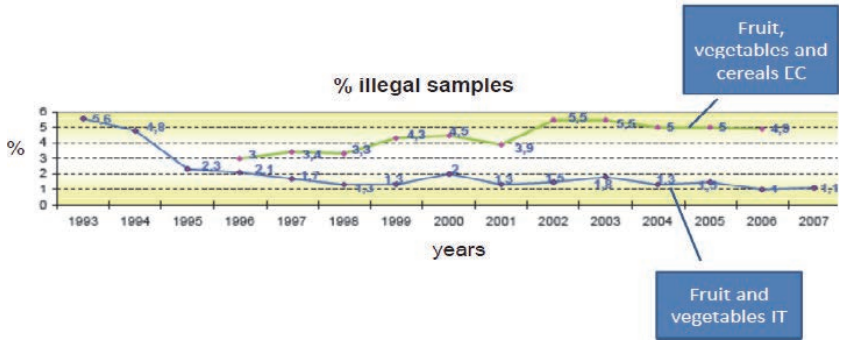


Figure 12. Italian and European compliance with the regulation on pesticides residues

There are few analyses about the environmental and social damages (as impacts on human health) of the use of pesticides. Following Pimentel (2005), the social cost due to the use of pesticides is estimated in $10 billion per year in the Unites States[4]. The elements included in the analysis are "*the pesticide impacts on public health; livestock and livestock product losses; increased control expenses resulting from pesticide-related destruction of natural enemies and from the development of pesticide resistance in pests; crop pollination problems and honeybee losses; crop and crop product losses; bird, fish, and other wildlife losses; and governmental expenditures to reduce the environmental and social costs of the recommended application of pesticides*" (pp. 229). As regards the economic cost of human pesticide poisonings, the following figure summarizes the major identified costs (Fig. 13).

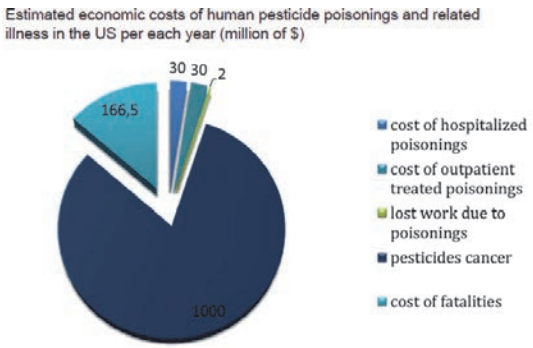


Figure 13. Economic costs of human pesticides poisoning, in the US (from data of Piemental, 2005)

The higher cost is represented by pesticides cancer, followed by the cost of outpatient treated poisonings. Although the total cost is alarming, it is worth noting that it is probably underestimated because it is calculated only on officially recognized cases which are clearly connected with the exposure to pesticides.

[4] Pimentel D. (2005), Environmental and Economic Costs of the Application of Pesticides Primarily in the United States, *Environment, Development and Sustainability*, vol. 7, pp. 229-252.

4. CONSUMERS' PERCEPTIONS AND SUSTAINABILITY OF PESTICIDES USE

What is the perception that consumers have about the use of pesticides and the food market? In a survey carried out by Eurobarometer[5] in 2010, citizens have been asked to identify some potential risks as they perceive them. The question posed to citizens was about the perception of "the likelihood to happen to you" in relation to different potential risks – from the economic crisis to environmental pollution damaging your health – and including the option that commonly eaten food may damage consumers' health.

Comparing the results of the survey carried out in 2005 and the second survey carried out in 2010, it is highlighted that almost 50% of the European citizens are worried about the potential risk to be damaged by food, with a slightly positive increase from the previous survey (Fig. 14).

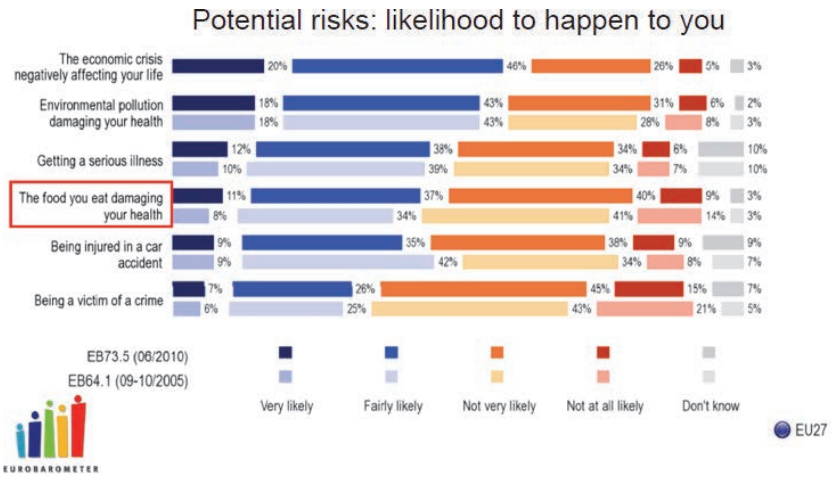


Figure 14. Eurobarometer survey on risks perception

Among the specific risks perceived by european citizens about the idea that commonly eaten food may damage their health, the survey underlines the following fears: presence of chemical products, pesticides, toxic substances (which is the most relevant perceived risk in this category); food poisoning and bacteria; food additives, colouring and preservatives; lack of sanitary controls; new viruses and diseases; risk of contracting bovine spongiform encephalopathy. It is clear that in order to reduce crop losses, we need to protect crops from pests, but at the same time, pesticides produce many negative effects on agriculture, health and the environment. The research for sustainable ways to protect crops and reduce losses without damaging human health and the environment tries to answer to such challenge. The dependence from pesticides

[5] Eurobarometer is the Public Opinion Analysis sector of the European Commission. Since 1973, the European Commission has been monitoring the evolution of public opinion in the Member States, thus helping the preparation of texts, decision-making and the evaluation of its work.

has to be substituted by alternative protection measures in a perspective of a sustainable agriculture. The definition provided by the Sustainable Agriculture Initiative Platform (a worldwide food industry organization aimed to support the development of sustainable agriculture, involving stakeholders of the food chain) is: "*Sustainable agriculture is the efficient production of safe, high quality agricultural products, in a way that protects and improves the natural environment, the social and economic conditions of farmers, their employees and local communities, and safeguards the health and welfare of all farmed species."* (http://www.saiplatform.org/sustainable-agriculture/definition). Thus, the final goal is to increase food production in quantity and quality while preserving the environment. Sustainable Agriculture is based on three pillars: achieve economic, environmental and social sustainability in the agriculture sector. In this perspective, sustainability refers also to a viable, durable and equitable agriculture.

In order to be achievable, sustainable agriculture needs the effort of all actors of the complete food chain, from growers to consumers: the role of consumers, in particular, is really important because, even if they stay at the end of the food supply chain, they are the main drivers of food demand. The key question, indeed, is: "are consumers available to spend more to have access to a sustainable food?" We already know that consumers of organic food are available to do that: they pay more the food because they demand organic food items for their consumption. Is it the same for sustainable food? Data from Eurobarometer (2013) says that European citizens are available to spend more in case they are sure about the real sustainability or respect to the environment (the green aspect) of the products they are buying: it is important, as the organic sector did in the past, to clearly communicate what a sustainable food is and to increase the reputation of the sustainability system. Only if consumers will be available to buy sustainable food, more expensive than conventional food, all the food chain will be able to support the costs of agricultural sustainability. One of the major costs derives from the need to enforce a traceability system which could be able to control sustainability of the food items across the whole food chain, which means from suppliers, through the manufacturing sector, the distribution, customers and, finally, consumers.

The European Commission provided several regulations and directives concerning the sustainable use of pesticides[6]. The aim, indeed, is to progressively move from conventional agriculture to a sustainable one (Fig. 15).

[6] Over the past decades the European Union has put in place a broad range of environmental legislation, consequently, chemicals legislation has been revised and the use of many toxic or hazardous substances has been restricted. The European Environment Action Programme is available at: http://ec.europa.eu/environment/newprg.

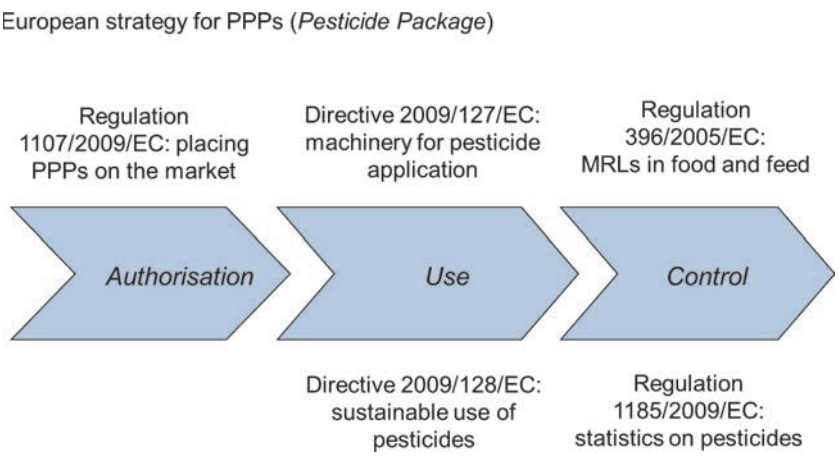


Figure 15. EU Pesticide Package

The European directive 128/2009 is particularly important because it specifically talks about the sustainable use of pesticides with the aim of reducing the risk and impacts of pesticides on human health and environment by promoting the use of integrated pests management and alternative approaches to pesticides. This directive also includes different articles going to the direction of increasing the awareness of the citizens about the risk of pesticides. Beyond the regulation effort, indeed, this directive achieves a broader result which is the contribution to build up and diffuse a new awareness about sustainability. As a provision of such directive, today European agriculture must be based on Integrated Pests Management (art. 14).

Integrated Pests Management (IPM) refers to the use of an integrated approach to reduce the pests' population and to use chemicals only when they are strictly necessary and no alternative methods exist. There are several actions that respond to such need and may be summarized as agronomic practices, resistant plants, physical methods, and biological control agents as alternatives to chemical pesticides. The directive states (art. 14) also that member States are obliged to help growers and farmers in applying IPM: the scientific research effort which has been done in the last decades, indeed, clearly shows that it is possible to control pests with a limited use of chemical pesticides; however, it is necessary to transfer this knowledge from researcher to growers and farmers in order to improve their skills and making them able to implement IPM techniques (Rossi et al., 2012). Although of primary importance, supporting the knowledge transfer is not sufficient to achieve the final goal of a sustainable agriculture: it is mandatory that national governments invest money for supporting growers in applying sustainability of agricultural practices.

5. CONCLUSIONS

Food losses are a major constraint to food security and they impact disproportionally in developing countries rather than in countries with more advanced agricultural systems. They bring several impacts by an environmental,

economic and social point of view and, for these reasons, there is an urgent call to reduce such losses. The first answer has been the use of pesticides which have provided effective measures against pests. However, their massive use across decades has also contributed to large environmental negative impacts with a direct connection to human health issues. Thus, a new strategy able to protect crops but, at the same time, able to avoid such negative effects is strongly required. An approach of sustainable agriculture, including Integrated Pest Management techniques, seems to be the more effective way to achieve more sustainable productive systems and to support a more equitable access to food at global level.

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Climate change and agriculture: Reducing food risk through Adaptation Strategies

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Irene Monasterolo[2]

1. INTRODUCTION

An increasingly accepted evidence suggests that food insecurity in several less developed countries (LDCs) can be exacerbated by climate change (CC) (see for example World Bank, 2013; Asian Development Bank, 2013). Although a large part of this evidence does not prescribe agricultural strategies to reduce this risk, it is enough clear that strategies of adaptation to climate change can play a major role in reducing the expected losses. The Climate Smart Agriculture approach being recently implemented (Nyasimi et al., 2014; FAO, 2014) goes in this direction by focusing on sustainable agricultural intensification for food security and resource resilience, and adopting mitigation and adaptation measures to curb GHG emissions linked to agriculture, waste and pollution (Contò et al., 2014). Still, in order to be effective, it needs to be supported by a change in risk behaviour and by long term investment plans, which often go beyond the short term policy focus (Monasterolo et al., 2015).

The importance of taking seriously the need of adapting agriculture – especially in LDCs – to CC depends on the still overwhelming importance of agriculture for LDCs themselves, and the global spillovers and systemic effects that food risks in these countries can exert at the broadest scale. Land used for agricultural production is about 70% of the global land surface and has a key influence on essential ecosystem services and environmental public goods (IPCC 2007). In particular, agriculture provides livelihood support for 40% of global population and in particular for 70% of rural poor in LDCs (IAASTD 2009). As a result of global socio-economic and demographic changes (population growth, changing lifestyles due to growing middle class in emerging countries), in the coming decade agriculture it is called to meet a global food demand expected to increase by 70% by 2050 (OECD/FAO 2009). At the same time, agriculture remains the first engine for growth in LDCs. In fact, it represents 28% of GDP in LDCs on average and in some LDCs the share reaches 57% (to be compared to 10% in middle income countries). GDP growth originating in agriculture is two times more effective in reducing poverty than GDP growth outside agriculture (World Bank, 2008), and more than 80% of reduction in poverty worldwide is due to development in rural areas, rather than migration to cities. For every 10% increase in farm yields, there is an estimated 7% reduction in poverty. Failing

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to take an active agriculture strategy in front of a global systemic change like climate change can have consequences that go far beyond limited episodes of food insecurity in some poor countries as it can impair the achievement of key MDGs on a large scale. Recent studies have already linked food commodity prices volatility experienced in 2007/2008 to the episodes of political instability (see, for example, for the Arab Spring, Lagi et al., 2011).
In this paper, we will firstly depict a few key elements of interaction between agriculture and climate change. Then we will propose to look at climate change adaptation, in general and in LDCs agriculture, as a required paradigm of change in development strategies, which implies, from a methodological perspective, a change in the culture of decision making and governance. Then, we will summarise the recent development of the international higher-level policy approach to climate change adaptation, in which LDCs agriculture has a central role, together with the 'climate finance' framework for adaptation. We will conclude by suggesting a set of open issues to be addressed in the current debate on climate adaptation within the Post-2015 Agenda and the Sustainable Development Goals.

2. CLIMATE CHANGE AND AGRICULTURE: A CIRCULAR RELATIONSHIPS

2.1 *Impact of agriculture on CC*

The agricultural sector is an important contributor to anthropogenic Green House Gases (GHG) emissions at the global level, around 10-12% of total GHG emissions, and this share is growing. This issue is particularly relevant in LDCs, given the role of agriculture for promoting development, and the need to manage ecosystems and important natural resources, such as forests. This dualism is often addressed as a trade-off in resource use (sustainability versus growth opportunities, see Green, 2014) given the absence of clear international policy recommendations. LDCs produce around 12.5% of global agricultural emissions and this share increased by 2.3% per year in the last decade (Figure 1). Furthermore, LDCs' agricultural development is one of the drivers of deforestation and land use changes that contribute to 17% of total global emissions. These figures suggest that, although agriculture – in particular, LDCs agriculture – does not have a central direct role in the global system of anthropogenic GHG emissions – which is dominated by energy production, transport, and industry – it can play a significant role within the global strategies of CC mitigation. In particular, given the central role of agriculture in LDCs' economies, it can be the main sector in which LDCs contribute to global climate change mitigation strategies. However, given the need to increase food production in LDCs to face the dietary requirements of a growing population despite the stabilizing fertility rates (UN Population Department, 2013), and the need to tackle LDCs unsolved problems such as poverty and famine, this contribution can mainly come from technological solutions and organizational innovations able to deliver enough agriculture productivity while reducing the use of energy and resources. As it was evidenced by the World Bank, investments and technology to allow access to affordable, reliable and sustainable energy are essential to reduce poverty, particularly in LDCs,

were energy poverty negatively affects the development of a functioning value chain to assure access to food.

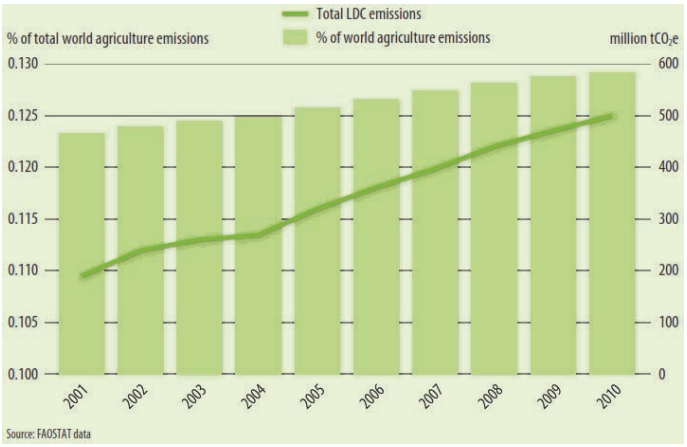

Figure 1. Trend in LDC agricultural sector emissions of methane and nitrous oxide (million tonnes carbon dioxide equivalent, tCO_2e), 2011-2010. Source: Tennigkeit et al., 2014, https://ldcclimate.files.wordpress.com/2014/03/updated_ldcp13_agriculture.pdf

2.2 *Impact of CC on agriculture*

According to a large set of studies and model-based simulations produced in the last two decades (see World Bank 2010; Stern et al. 2006, IPCC 2013), the expected impact of CC on agriculture is much more relevant. As a consequence of the CC-induced changes in hydrological regimes and temperatures, especially on a regional scale, crop yields are expected to decline despite technological progresses (e.g. introduction of flood-resistant rice in Asian countries or drought resistant seeds in Sub Saharan Africa). A recent study by IFPRI (2009) highlighted that CC could reduce yields of irrigated wheat and rice by 30% and 15% respectively with important consequences for food security and malnutrition. Still, the expected impacts both of agriculture on climate change and vice-versa are unclear, while a geography of climate impacts on agriculture already emerges. According to the IPCC Fifth Assessment Report (2013), there are significant uncertainties on the scale and the timing of effects but the largest declines in crop yields are expected in tropical areas. The reviewed studies indicate that crop yields may decline by 8% by the 2050s in Africa and South Asia. In Africa, CC is expected to decrease maize yields by 5%, but no changes were identified for rice and results for cassava are inconclusive. The yields of other major crops (e.g. sorghum and millet) are expected to decline significantly. Figure 2 summarizes the expected impacts of CC on different sectors, including food production, together with the range of uncertainty on the causation by CC itself.

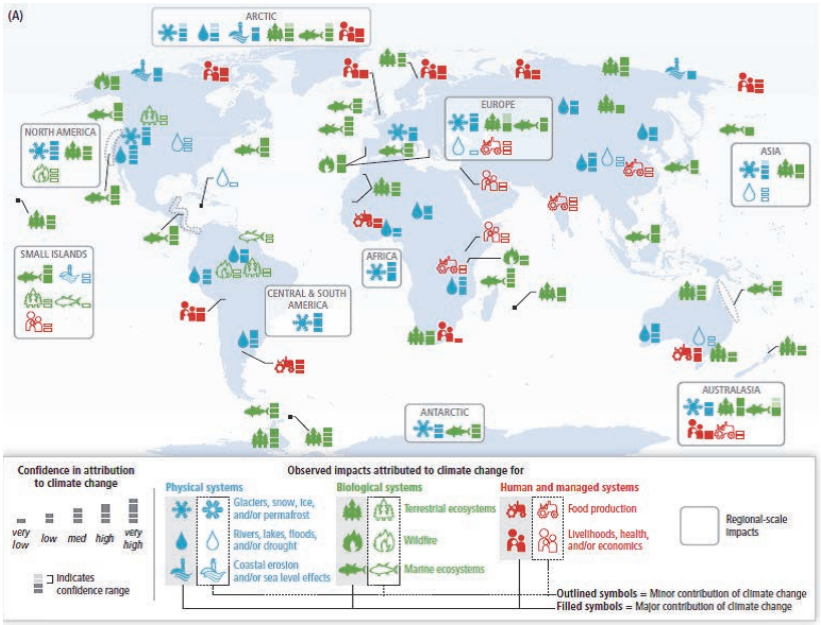

Figure 2. Expected ecological, economic and social impacts of climate change. Source: IPCC 5th report (2013), WG2 https://ipcc-wg2.gov/AR5/images/uploads/IPCC_WG2AR5_SPM_Approved.pdf

While CC is generally seen as a slow systemic change, its main effect is to increase weather extremes and the risk of natural disasters even in the short term. Out of 24 countries identified as highly exposed to CC-related hazards, 17 are LDCs (Shepherd et al., 2012) also because risk results from the interaction between extreme events (natural hazard) and physically and socially vulnerable systems. For example, uncontrolled urbanization in African, Caribbean and Pacific countries (ACP) is such that most of the region's cities are located in hazard-prone areas and face +50% risk of flood-related disasters due to the reinforcing action of growing urbanization around coastal areas (expected to reach 70% in the next decade) and the increased probability of extreme climate events such as cyclones and sea-level rise. ACP already account for 42% of estimated global economic losses and 85% of deaths as a result of natural disasters, and have to support on average $15 bn per year to restore infrastructure and economic activities in affected countries (ADB, 2013). Recently, natural disasters started to play also a relevant role on financial markets. In fact, despite higher recurrence of extreme events, in the last couple of years Catastrophe Bonds issued from the beginning of 2014 increased to a record $4.75 bn (Tett, 2014). Even more worryingly, four-fifth of such amount was bought by pension funds.

Extreme climatic events linked to CC (droughts, heat waves, floods) can have severe impacts on agriculture. Drought can impact crop and breeding through soil moisture uptake, root and shoot growth, plant processes (photosynthesis, respiration, plant water uptake), final yield and can stimulate reactions often leading to long-term land degradation. Sometimes it can have positive impacts like increased sucrose content in maturity stage of sugar cane. Floods effects in non-growing season can be: loss of top soil; loss of soil nutrients; soil

compaction; soil erosion; permanent damage to perennial crops; impossibility of farming in floodplains. In the growing season, floods can cause waterlogging of crops, loss of soil nutrients and pasture use, soil erosion, interruptions to farm operations.

In addition to these direct effects, extreme events can have indirect effects through loss of production factors (e.g. infrastructural capital) and increased production costs (e.g. transports). Furthermore, effects can be intangible and difficult to measure like fear of future disruption, loss of trust, stress. The consequences of CC-related disasters can extend in the long term, as in the case of loss of perennial crops and forests, and can make land unsuitable for production for years. These long term diffuse effects are relevant especially on small-scale farming systems, and they are often neglected or considered to be of minor economic interest.

Therefore, when translated into economic and trade effects, CC is likely to (i) impair capacity of increasing food production, and (ii) of eradicating poverty in LDCs, (iii) increase LDCs' dependence on food imports, in particular dependence on net cereal imports, and (iv) cause spikes in commodity prices, which can worsen the situation of food-importing LDCs. According to ADB (2013), countries most exposed to CC in Asia are Afghanistan, Bangladesh, Cambodia, India, Lao PDR, Myanmar, and Nepal. In particular, Afghanistan, Bangladesh, India and Nepal are vulnerable to declining crop yields due to glacial melting, floods, droughts, erratic rainfall. India's water shortfall due to CC is forecasted at 400 billion m3 by the 2050s. Furthermore, Asia is most disaster-afflicted region in the world, with 89% of population hit, and in developing Asia more than 60% of the economically active population and families (2.2 billion people) rely on agriculture for livelihoods. Scenarios indicate that CC will slash up to 9% of the South Asian economy every year by the end of this century (ADB, 2013).

The effects of CC on LDCs agriculture are then characterised by negative loops at a systemic level. Persistent change from CC is faster than social, technologic and economic adaptive capacities. For example, disruptive extreme CC-related events can increase volatility of commodity prices (food, feed, and fuel) that adversely affect population living below the poverty line. A worsening poverty level can increases the risk of political instability, which can reduce peoples' ability to cope with CC by lowering community resilience and leading to breakdown of critical services. This chain of effects can increase the risk of human consequences, by disrupting livelihoods due to breakdown of infrastructures (e.g., healthcare services, roads) and putting sources of households' income at risk. At the same time, it negatively impacts on government budgets especially in developing and low income countries where natural disasters could reverse decades of progresses in fighting poverty (World Bank, 2013). The localization of distributional effects, starting from hydrological and food systems geography, do matter as well.

The complexity of effects can be of global scale if the responses to CC in developed countries are included into the picture. The most relevant case is the consequence of biofuels policies in Europe and other industrial countries, which are led by the implementation of global CC policy and affects LDCs agriculture through world commodity markets. For example, the EU climate policy strategy encompasses a compulsory target of 10% biofuels in final automotive fuel consumption by 2020. The domestic potential for biofuels is largely insufficient

to meet this target. According to a well-established evidence produced before the introduction of a mandatory target for biofuels in Europe (see OECD 2006), a 10% target would require to allocate to biofuels 72% of all the area currently allocated to cereals, oilseeds, and sugar crops in Europe. This is clearly unfeasible in the short term and would increase the trade-off in allocation of investments on food and off-food production. Not surprisingly, the consequence of these domestic mandatory targets has been a strong pressure to import agricultural feedstocks for biofuels or directly biofuels produced in other areas, thus creating competition with food production in world agricultural markets. Mandatory targets for biofuels have been one of the recognised causes of increasing agricultural prices in 2008-2010 and beyond. This mechanism and its consequences have been extensively studied and debated, in particular in terms of net benefits for LDCs farmers (increasing production and prices) and LCDs poorest population (higher food prices with high share of food in total household expenses), land use reallocation (including land grabbing), more intensive agricultural practices (OECD-FAO Agricultural Outlook 2013; Nalepa, 2011). A moratoria on mandatory targets for biofuels policy has been asked for by international organisations (www.econexus.info). This example suggest how agriculture can be systemically sensitive to CC: not only via direct effects on food production but also indirect effects, originated by CC policies and possibly transmitted by international agricultural markets.

3. POLICY RESPONSES: MITIGATION AND ADAPTATION TO CC IN LDCS AGRICULTURE

If the relationship between LDCs agriculture and climate change is a bi-directional one and encompasses both an effect of agriculture on CC and effects of CC on agriculture, then LDCs agriculture is necessarily involved in both mitigation and adaptation strategies for CC. The distinction between mitigation and adaptation, now common in global policies for CC, is a logically useful way to distinguish between different strategic possibilities.

'Mitigation' is about reducing anthropogenic contribution to CC by curbing GHG emissions. Mitigation is, generally speaking, linked to the technological sphere, especially for energy use, but can encompass also social and individual behaviour change (e.g. reducing excess consumption or producing and consuming in an energy-efficient way). Mitigation has directly to do with the 'effect of agriculture on CC' (see above). In agriculture, for example, mitigation is about adopting less carbon-intensive energy technologies and practices, but also changing human settlement and land use models (e.g. controlling deforestation).

Technological options for mitigation to reduce GHG emission and increase soil carbon are extensively available, deployable and can be adopted at relatively low-cost. They include minimizing nitrogen fertilizers overused in crop production, adopt practices able to sequester carbon in soils of cropland, grazeland and rangeland (Verhagen et al., 2014), conversion to no-tillage systems, integrated nutrient and pest-management practices, extended grazing season, farm forestry, and organic fertilisers. According to FAO (2012), the mitigation potential from changing agricultural practices is high, up to 4.5-6 Gt CO2e/year in 2030. Several studies find that these practices can have (if

properly implemented) not only positive CC implications but can also deliver positive yield responses (Cooper et al., 2013).

'Adaptation' to CC, instead, is generally referred to strategies/measures which are aimed at minimising environmental, economic and social losses or undesired effects from a CC that is already taking place or is expected to take place in spite of mitigation policies. Adaptation is therefore directly and strongly linked to the 'impacts of CC on agriculture' (see above). In an adaptation perspective, a whole agricultural development strategy (not only single technologies) has to be changed to incorporate either a self-protective response to CC effects or simply CC-related risk and uncertainty. The key point is that, in order to reduce CC related risks, uncertainties and losses, adaptation requires us to think and to plan in a different way, taking risk reduction and loss prevention as key words in the governance of the decision making process. This can have far-reaching consequences given the central role of agriculture in LDCs economies: it can imply to rethink the whole national development strategy, in particular in those countries which are vitally linked to natural resources and the environment – for example for tourism, which is an increasing source of income for many LDCs.

A key general issue of adaptation, considered as a preventive action in front of expected losses, is that, although there is a sound evidence on its net socio-economic benefits, it is rarely implemented. The main reason for this 'adaptation paradox' is that adaptation investments have costs that are certain and are to be supported today whereas benefits (such as expected loss reduction) are uncertain and expected to materialise tomorrow, where 'tomorrow' may mean decades. Therefore, the choice for adaptation measures and investments depend on how we discount the future. In addition, we don't see avoided losses exactly because they have been avoided (non-observable), and the counterfactuals to measure the benefits of prevention (avoided losses) are just hypothetical, at best produced by good models. Furthermore, the cost of prevention/adaptation is often an 'opportunity cost', especially in development strategies: prevention often means 'not to do' – or to do differently and more costly with respect to cheaper alternatives in current practices. This can be a critical difference with respect to the economic cost/benefits of 'mitigation' (reduce emissions) that can have a pay-off from creating 'green economy' sectors, e.g. renewable energy industry. The result is that we are more prone to accept the probabilistic cost of impact than the certain cost of prevention/adaptation even in the case the latter is much lower than the former. Adaptation to manage CC-related risk and uncertainty is, therefore, difficult to implement because of its very basic features as a social choice.

Because of its generally systemic features, adaptation can be very difficult even to be planned, designed and translated into policy measures to be introduced in national development programs. Adaptation strategies, even just in agriculture, involve complex sub-systems of the local economy in which public actors (governments, international agencies) and private stakeholders (insurances, commercial banks, NGOs, households) do intensively interact. They may imply considerable direct costs (e.g. structural works to protect land), and uncertain outcomes, and can require tailored, very specific tools according to the resilience of the local community. Furthermore, they can require forward looking policy planning, persistent and patient action over a long time, and adequate financial resources to be deployed in most vulnerable areas. Therefore, adaptation requires

decision makers to look at the 'big picture' behind the development strategy while there is often lack of proper perception, data management and modelling tools to elaborate a proper approach to adaptation. In the case of agriculture, adaptation requires a very good understanding of the way agriculture works in LDCs. Finally, it can be noted that, while mitigation and adaptation are logically different issues and require different strategies, they can be technically inter-linked in agriculture: for example, low-emission agricultural practices can also reduce risk of soil erosion.

While designing and implementing adaptation in practice must have specific geographical areas and socio-economic local systems as a natural scope – although under general common guiding principles and criteria (e.g. prevent risk, increase resilience, self-insure), there is an international high-level institutional process on CC adaptation and it largely involves LDCs agriculture. Its meaning is to push and enable poor countries participating in the process towards global climate change policy (non-Annex I countries of the UNFCCC) to undertake comprehensive and coherent adaptation strategies. We will shortly review this institutional process by highlighting its main features and instruments.

4. THE UNFCCC FRAMEWORK FOR CC ADAPTATION IN LDCS

Adaptation gained a significant role in global (and local) CC policies only since a few years. In the process of the UNFCCC, a Cancun Adaptation Framework (CAF) has been defined and adopted as part of the Cancun Agreements at the Conference of the Parties 16 (UNFCCC 2010). The policy claim has been *"Adaptation must be addressed with the same level of priority as mitigation".*

The CAF includes, inter alia, on the side of 'Implementation':

- A process to enable LDC Parties – building upon their earlier experience with the NAPAs (National Adaptation Programs of Action)- to formulate and implement National Adaptation Plans (NAPs);
- A working programme to address losses and damages associated with CC impacts.

On the side of 'Support', it includes the provision on developed country Parties "*to provide developing country Parties, with long-term, scaled-up, predictable, new and additional finance, technology, and capacity-building to implement adaptation actions, plans, programmes and projects*"[3].

A summary of the priorities included by countries in their NAPAs is presented in Figure 3, which highlights the importance of agriculture in adaptation to CC. Out of 490 projects listed in LDC's NAPA documents available in 2012, around 100 are related to food security, and most of the remaining ones are closely related to agriculture (see also Keane et al. 2009). Almost 90 per cent of LDCs listed agricultural needs in their Technology Needs Assessments (TNAs) – a set of activities to identify the climate technology priorities of developing countries

[3] Information on CAF are available at http://unfccc.int/adaptation/items/5852.php, on NAMAs at http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/2679.php, on NAPs at http://unfccc.int/adaptation/workstreams/national_adaptation_plans/items/6057.php.

in fighting CC[4] The elaboration of National Adaptation Plans (NAPs) has then the potential for mainstreaming CC in long-term national planning, and in planning for agriculture and related sectors.

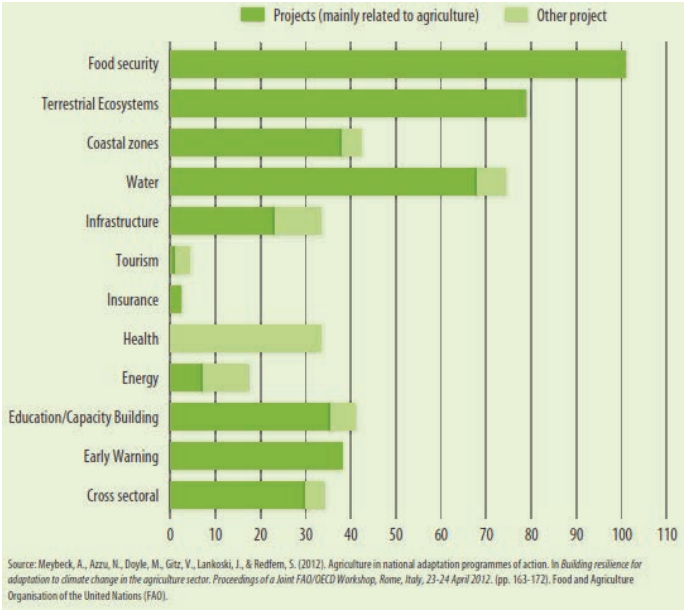

Figure 3. NAPA priority projects mainly related to agriculture. Source: Tennigkeit et al., 2014, https://ldcclimate.files.wordpress.com/2014/03/updated_ldcp13_agriculture.pdf

Bangladesh provides an example of adaptation strategy largely focused on agriculture. Moreover, it has been one of the first countries to complete a NAPA and committed significant funding to adaptation measures, which include: restoring mangroves as a coastal buffer from storms; building flood shelters; investing in preparedness of people in flood-prone areas; incorporating CC considerations into National Water Management Plan; updating the Bangladesh Climate Change Action Plan; integrating CC education into secondary and tertiary curricula. This latter measure is particularly interesting and important for the changing attitude required by adaptation which involves the dissemination and embracement of a culture of risk.

5. INTERNATIONAL FINANCE FOR CC ADAPTATION

According to the UNFCCC (2009) the additional costs of adapting to climate change in agriculture in LDCs are more than US$ 3 billion/year by 2030, but other estimates suggest they can be 60 billion/year. In the case of Africa, annual investment needed can be around US$ 48 billion and US$ 3 billion to

[4] On TNAs see http://unfccc.int/ttclear/templates/render_cms_page?TNA_home.

avoid the effects of CC on nutrition. The potential for investment in African agriculture from CC mitigation finance is US$ 10 billion/year. For comparison, the developed countries' aid to African agriculture in 2011 was US$ 3.1 billion (8% of total aid).

Financing needs	Billion US$ per year	Remarks
Agriculture	48	Excludes climate related investments
Adaptation	3	
Mitigation (SALM and waste management)	2.6 – 5.3	Assumes abatement costs of US$ 10-20/tCO_2e
Mitigation (avoiding 75 per cent of total deforestation)	8.1 – 16.2	Assumes abatement costs of US$ 10-20/tCO_2e

Table 1. Agricultural financing needs in Africa. Source: Tennigkeit et al., 2014, https://ldcclimate.files.wordpress.com/2014/03/updated_ldcp13_agriculture.pdf

Total costs of adaptation in LDCs are, according to UNFCCC (2009), in the range of US$ 28 – 67 billion per year by 2030. A significant increase in adaptation finance is expected from dedicated climate financing instruments, like Least Developed Countries Fund, Special Climate Change Fund, and, in addition, Adaptation Fund, Pilot Program on Climate Resilience of the Climate Investment Funds, the EU Global Climate Change Alliance. The issues of scale and distribution of adaptation finance to highly vulnerable countries, vulnerable people and populations groups remain debated at the international level.
The reality of actual funding for adaptation remains, at present, disappointing. According to Climate Funds Updates (http://www.climatefundsupdate.org/themes/adaptation), in 2012 "*the largest part of total spending, 13,3 billion/$ or more than 70%, are projects focused on mitigation; to these, the mitigation-REDD projects can be added to arrive at around 78% of total allocated to mitigation. [...] Only around 14% is spent on adaptation, which usually involves more complex projects on (local) development*" (Table 2).

Focus	Spending	Share %
Unknown	20,00	0,10
Adaptation	**2.635,51**	**13,8**
Mitigation – REDD	1.493,25	7,88
Mitigation – general	13.357,69	70,32
Multiple foci	1.488,08	7,83
Total	18.994,53	100

Table 2. Climate finance for mitigation and adaptation in 2012
Source: http://www.climatefundsupdate.org/themes/adaptation

According to Climate Finance Landscape (http://www.climatefinancelandscape.org/flows-diagram/), which uses a different approach from Climate Funds Updates, in 2012 mitigation investments reached US$ 337 billion out of the total

USD 359 billion of climate-related finance. Investments in renewable energy generation alone attracted 74% of total climate finance flows with USD 137 billion going toward solar (including PV, thermal, and households' investments), followed by USD 85 billion for wind (onshore and offshore). Around USD 20-24 billion were invested in activities with adaptation objectives, mostly through international finance invested in developing countries. According to the same source, development finance institutions contributed to 81% of this flow while government bodies provided 16%, and climate funds 3%.
In spite of this still ancillary role of adaptation funding within the overall climate finance, there is a clear expectation that increasing flows of adaptation finance will be available for the agricultural sector. Agriculture has suffered under-investments for decades while investment in capital goods, e.g. irrigation infrastructure, and agricultural research and advisory services are essential to reduce the vulnerability of agriculture in LDCs. Agricultural investments in LDCs are eligible to many sources of climate finance (Least Developed Countries Fund, Adaptation Fund, and Pilot Program for Climate Resilience), and may receive a priority by Green Climate Fund. Agricultural adaptation actions can be integrated with national agricultural investment plans. At this regard, the above-mentioned NAP process in LDCs provides an opportunity to capture and channelize financial resources.

6. OPEN ISSUES

While LDCs agriculture provides many potential opportunities to contribute to mitigation of CC, the key issue for LDCs agriculture in front of CC is to develop adaptation strategies to prevent losses from CC, the potential scale of these losses (human, economic, social) being so huge to impair possibly the capacity of adequate food production together with increasing risk of overall socio-economic losses.
While international and global climate policies are now embodying adaptation, in particular through the implementation of the Cancun Adaptation Framework, this process is very gradual, and the same applies to the connected process if international climate finance, in which adaptation still plays a minor role.
In this paper we have tried to suggest that the gradualism and the weaknesses of this process arise from the very nature of adaptation as a strategy, its understanding and the associated challenges it raises for development strategies well beyond the agricultural sector. In order to timely and effectively build adaptation to CC, policies should be targeted to the multidimensional development characteristics and issues which are country specific, and consistent with the development priorities and goals supported by the national development strategy.
Apart from some specific technical solutions to be adopted to protect crops, land and ecosystem services, adaptation has to do with understanding and embodying risks, prevention and foresight in agricultural strategies as well as development strategies at large. In fact, losses to food production can come from the lack of adaptation in sectors in the upstream and downstream parts of the production and value chain involving agriculture. Embodying risk, prevention and foresight in strategies and decision is a change in the culture

of governance (both at the global and local level), which goes far beyond the inclusion of an additional risk in a conventional decision process.
On the practical side, adaptation strategies can imply short term economic losses with a high degree of certainty – especially in the form of productivity losses and opportunity costs compared to conventional approaches to agricultural and economic development – in front of uncertain expected benefits in the future. However, the potential future losses in case of inaction, although probabilistic in nature, are so huge to make decision makers opt for a rational choice to support the short term costs. This cultural change might be differently phrased in terms of precautionary principle and option value.
Among the many possible barriers to adaptation strategies it must be mentioned that, especially in the short term, they produce local public goods that suffer from provision disincentives especially in LDCs countries which are the focus of this paper, not too differently from mitigation strategies that produce global public goods.
Other more technical issues are still open. First, in an ex-ante perspective, it is still to be understood what is the actual evaluation capacity of adaptation cost and benefits by farmers, land owners, local governments, in particular for the expected cost of non-action. A large part of the knowledge needed for adaptation strategies is rooted in modelling and counterfactual building that go well beyond the average capacities of most (local) governance actors. At the same time, despite relevant advances in research results in terms of CC effects and linkages with the development dimension, a gap with the policy dimension still exists which prevents the development of evidence based adaptation policies, calling for the enforcement of a knowledge co-production process between the academia, business sector and policy makers. Instead, in an ex-post perspective, the question pertains the identification of the proper figure with the right competencies to evaluate the effectiveness of complex strategies such as adaptation and the use of 'climate finance' for adaptation projects. Measures for adaptation can be so systemic and un-specific to make loose effectiveness and cost-effectiveness analysis while uncertainties on these two evaluation levels could reduce the political and social support to policies.
From a technical point of view, given the specific characteristics and geography of the interplay between agriculture and CC, in the short term specific 'climate resilient' agricultural strategies can be more effective (see DFID 2011) in tackling immediate effects, while contributing to shed light on such complex and adaptive system of relations towards the development of a consistent and country targeted 'climate smart agriculture' strategy.

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PART FOUR
Research and Policy for Poverty Eradication

Scientific Knowledge and Technology. Call for a New Humanism

Miquel Gassiot i Matas[1]

It is more or less universally accepted that, on our planet, the human person is the latest wonder of the evolution which culminated in the emergence of *Homo Sapiens* and his incomparable growth in terms of knowledge and technological development.

On many occasions, humanity and the human person have had the opportunity to pause on their way so as to look back and take stock of their and our own history. Having said this, this retrospective reflection was the most often brought about by collective failures or disasters, whether they were caused by human behaviour itself or were a serious warning on the part of nature itself, reminding all of us that we should have listened to the wise men or prophets who, because of their inspiration or their capacity of reflection, had been able to perceive the greatness and the fragility of the human person in the face of the mystery of his life – over and above the contingencies of everyday life, human ambitions or passions.

The text of our reflection will be constructed on the basis of the following six points:

1. From *Homo Sapiens* to *Homo Technologicus*
2. The vocation of the human person for transcendence
3. The autonomy of science: the scientific method
4. The explosion of technology and the major crises of the 20th century: the two World Wars
5. From faith in science and technology to ecologism
6. The need for a new humanism

1. FROM HOMO SAPIENS TO HOMO TECHNOLOGICUS

Our history is punctuated by multiple crises, which are attributed to imbalances in the relationships between social groups, between societies and between countries and which are themselves the consequences of the problems of adjustment of demographic and economic growth and different technological capacities. These problems have generally given rise to the greatest failures of human coexistence, namely wars. For the greatest misfortune of mankind, it is these that mark the uniqueness of our history, much more than the progress of humanity which, in the course of the last few centuries, has been prodigious.

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Figure 1 can contribute to explaining the limitations of our knowledge and our capacities to manage our coexistence as free human beings.

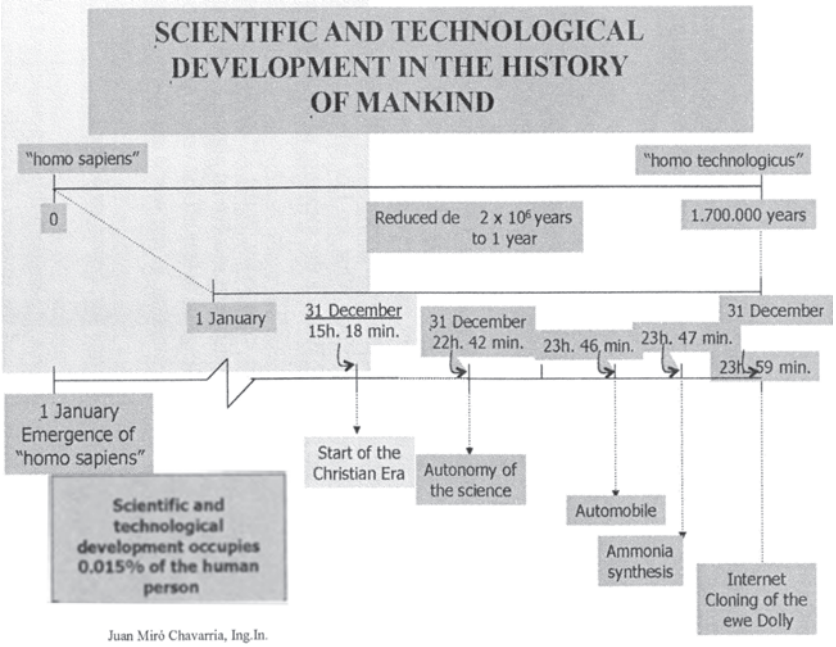


Figure 1

Commentary Figure 1

To better understand the exponential growth of the technological resources of the human person, it is interesting to reduce our historical scale. Let us reduce to one year the two million years that separate *Homo Sapiens* from today's man whom we will call *Homo Technologicus*. Let us now place the major events of human knowledge, in proportion to their dates, between 1 January and 31 December of the year thus obtained. It is striking to observe that almost all of our history has taken place from the dawn of 31 December. Thus, the birth of the Christian era would only have taken place on 31 December at 15h 18". We have reinserted the major technological events in this diagram. This enables us to conclude that scientific and technological development occupies 0.015% of the history of the human person on the arrow of time.

We can ask ourselves the following question: has the progress of mankind in terms of wisdom been similar and parallel to scientific and technological progress? Is our humanity not experiencing a crisis of assimilation of what it has learned and achieved in the last 0.015% of its history?

It is clear that the 18th and 19th centuries were the most productive in terms of scientific knowledge. This period saw science flourish and even get its

«autonomy», the basis of the vast technological development which had given rise to the Industrial Revolution. It is, however, relevant to refer briefly to the Palaeolithic or Neolithic stage of knowledge. In these eras, men were thinking and trying to explain or discover the meaning of the great wonder of the world in which they were living. Ancient man approached the mystery of his life, based on the foundations of the simple observation of nature, to find some kind of answer to the following questions: What am I or who am I? Where have I come from? Where am I going? What is the meaning of death for man?

All these are questions which even today, in the 21st century, remain topical and which have involved and continue to involve an appeal to men and women for transcendence, or which challenge us to tear off the veil of mystery of our lives so as to find a meaning or an explanation, in our world and within ourselves.

2. THE VOCATION OF HUMAN BEINGS FOR TRANSCENDENCE

We have many texts of ancient and modern thinkers which put forward an implicit challenge to humanity and the mystery of its life. Some examples of this anxiety:

One is hot, one is cold and wet, but all contain a little air and through this all things grow and are fed, this explains how every being in the universe is perfected and completed by the Sun and the Moon (Mesopotamia, 1st Century before Jesus Christ).

Sometimes it is possible to interrupt meditation on eternal things (ideas) and consider those which are most likely probable. We will thus feel a non-regret table pleasure (...) (Plato, 3rd Century before Jesus Christ).

Alchemy according to Paracelsus, 16th century:

It is the art of converting the impure into pure through fire, of separating the useful from the useless and of transmuting the useful into a final substance and its ultimate essence.

In this Antiquity, we cannot ignore the major contribution of the Chosen People: monotheism and the Old Testament. The Torah, the worship that corresponds to this and the culture that it has generated, have offered a transcendent response to the four major questions that were, in fact, a constant anxiety to human persons.

In the Greek world, major schools of thought emerged, where the great unknown of *Homo Sapiens* was addressed through reflections of a great rational consistency. These speculations ranged from observation and progress in getting to know things but aspired to getting closer to the first frontier of the mystery: ideas. Tue viability of a way of reasoning or a theory depended on the fact that it could not be refuted. Plato included cosmological reflections in his *Dialogues*, although he considered as being of secondary importance what we would qualify as empirical.

On the fringe of classic Greek thought, especially in Greater Greece and Egypt, significant schools of mathematics, physics and technology emerged for the initiated, amongst whom we can note: Archimedes of Syracuse and Heron of Alexandria. These schools mainly served the «warlords» of the times, from the 3rd Century before Jesus Christ to the 2nd Century of the Christian era.

Christianity deserves a special mention here as a salutary proposal in the face of the angst of the human person before the mystery of his life: the incarnation of the Son of God and the Gospel message are the foundations of Christian hope, although the greatest proof of love from the Creator to human persons was to respect their freedom, since Revelation does not expunge the mystery of our life but rather offers a rational basis for our Christian faith. Thus, the challenge of transcendence, or of our mystery, also remains for all who believe, albeit with Hope.

It was also at this period that the study of matter and of its transformation in an impenetrable or mysterious way began. Yet the human person considers that he or she forms part of this matter: consequently, matter was also subject to speculation, since this transformation could be the means of purifying man himself. It is here that Alchemy was born and the pursuit of the «quintessence» or «philosopher's stone» which could already be perceived in the Dialogues of Plato.

Alchemy comprised mystical elements, giving life, for example, to certain metals. The art of alchemy, as a representative of the experimental sciences from Antiquity to the Renaissance, had an all-embracing, holistic and even transcendent dimension, and it could also be said that it was linked to the beliefs of its day and age.

It is appropriate here to quote Blessed Ramón Llull or Raymond Lulle, who, amongst his many other occupations, was also an alchemist. Let us look, for example, at an extract from his *Llibre de Meravelles* (Book of Marvels), which highlights the wisdom of the Blessed.

The *Philosopher* instructs the disciple «Félix» who, in the pedagogy of Llull, represents the human person. To do this, he constantly used fables or parables like these:

«A great controversy broke out between iron and silver, iron maintaining that it was more necessary to people than silver, stating that men committed many sins for silver and disobeyed God. On the other hand, silver argued that it was more beautiful than iron, had a better sound than iron and was more loved by people than iron was, accusing iron in return for the fact that many men die by the sword, wounded by the knife, spear or dagger. Better to have iron in the ploughshare than gold or silver in the coffers... and chastity in ugliness is better than lust in beauty». (Ramon Llull, *Llibre de Meravelles* – XXXIV, 13th Century)

This dependence that exists between beliefs (I do not mean faith) and new knowledge has had a negative influence on the progress of science, more than on that of technology. In fact, according to Greek philosophy, particularly Plato, technology did not belong to the world of ideas, but rather fell within the framework of trades and the tasks entrusted to workers and slaves: technology was therefore completely «secular» and useful for war except if conclusions were drawn from its application which could change the established way of thinking or criteria. On this point, it is necessary to refer to technical progress in the preparation of navigational charts and navigation itself which, taking advantage of the development of mathematics, geometry and astronomy, laid the foundations of the heliocentric theory of Copernicus, Galileo and Kepler.

With the debate on the geocentric model of Ptolemy and the heliocentric model, we fully enter into the Renaissance, which opens with great upheavals for European society. The first of these is technological, namely the printing press created by Johannes Gutenberg in 1440, in Mainz. Others of a socio-political nature were to follow, such as the discovery of America, the power of City-States and the Reformation of Luther who, with Calvin and the *Acts of Supremacy* of Henry VIII, unleashed the profound religious tensions of the 16th century. The discovery of America opened a new dimension to a world that at this period was limited to the hegemonies of European monarchies. At that moment in our history, we could not fail to mention the incorporation and spread of classical culture within the European societies of that era, mainly through the School of Translators of Toledo. From the 13th century onwards, this body devoted itself to the retrieval of culture and classical thought, especially Greek. Man was rediscovered and there was a shift from theocentrism to anthropocentrism which rehabilitated the value of the human person in his or her individuality. This movement does not presuppose a separation from God as Lord of Creation, but rather a very special re-evaluation of his masterpiece: Man. This is what Michelangelo, with the support of Pope Julius II, masterfully expressed in the Creation of Man, central theme of the Sixtine Chapel ceiling, Vatican Museum.

With the Renaissance, Renaissance Humanism came into being in the Europe of the 16th and 17th centuries. This Humanism proposed to develop the capacity of the free man as the protagonist of nature and history. This humanism defends the spirit of freedom as a way of confronting, under another angle, the appeal to the human person for the transcendence that is inherent in his or her very nature.

After having briefly described how the Renaissance opened up a new era and offered us a new perspective on culture, it is time to make a leap of five centuries in order to return to our day and age and see how similarities emerge in the spiral of history. In order to do so, it is necessary start with a strong precious extract from the Encyclical *Caritas in Veritate* of Benedict XVI.

Caritas in Veritate (68):
The development of peoples is intimately linked to the development of individuals. The human person by nature is actively involved in his own development. (...)

Our freedom is profoundly shaped by our being, and by its limits. No one shapes his own conscience arbitrarily, but we all build our own «I» on the basis of a «self» which is given to us. Not only are other persons outside our control, but each one of us is outside his or her own control. A person's development is compromised, if he claims to be solely responsible for producing what he becomes.

This passage brings out the «personalistic» character of the Encyclical that can be found all through the text. The commentary of the theologian Josep M. Rovira Belloso on this subject, published in *Catalunya Cristiana* in May 2010, is entirely correct: «the protagonists of the Encyclical *Rerum Novarum* of Leo XIII were the workers of industrialisation. The protagonist of *Caritas in Veritate* is the person who aspires to a meaningful life».

Between this extract from the Encyclical and the texts of ancient and medieval thinkers that we have quoted as an example, we find a certain global conception that concerns the entire human being. Let us therefore return to the above-mentioned quotations:

- The eternal things (ideas of Plato)...
- Each human person of the universe is perfected...
- The quintessence untiringly pursued by the alchemists...
- The fable of Llull which subordinates the use of the elements, goods and wealth to the service of men and women, in line with God's purposes.

This extract from the Encyclical admirably establishes that the human person is the nucleus of society as well as of its development and is sovereign through the design of his Creator in the sense that *he builds his own «I» on the basis of a «self» which is given to us. A person's development is compromised (there will be no true development), if he claims to be solely responsible for producing what he becomes.*

This statement is important because it shows the vocation of human beings for transcendence and which was already present in many texts of the ancient sages. It is precisely this fact of being drawn to the mystery of the human person which confers all its strength to his thinking, his development as a person and his thirst for knowledge and technological improvement. It is in this vocation that the source of true social progress, on the basis of *«self» which is given to us»* can be found. It is this force, this ongoing challenge, which makes us develop as persons and allows us to overcome our major personal and collective failures.

3. THE AUTONOMY OF SCIENCE: THE SCIENTIFIC METHOD

We also find this tension or reflection amongst more modern thinkers, from the early Renaissance up to the 19th century, when the autonomy of science was already a reality. Francis Bacon is one example as well as William Cowper and Carlo Dossi.

The knowledge of man is as the waters, some descending from above, and some springing from beneath: the one informed by the light of nature, the other inspired by divine revelation.
Francis Bacon (1561-1626): *The Advancement of Learning*.

Knowledge is proud that he has learned so much,
Wisdom is humble that he knows no more.
William Cowper, English Poet (1731-1800): *The Task: The Winter Walks.*

Knowledge is no more than awareness.
Carlo Dossi, Writer, Diplomat and Italian Archaeologist (1849-1910).

In the introduction to the Encyclical *Caritas in Veritate*, Paragraphs 3 and 9 stand out:

Caritas in Veritate (Introduction, 3 and 9):
Only in truth does charity shine forth (...) Truth is the light that gives meaning and value to charity. That light is both the light of reason and the light of faith, through which the intellect attains the natural and supernatural truth of charity: it grasps its meaning as gift, acceptance, and communion. Without truth, charity degenerates into sentimentality. Love becomes an empty shell, to be filled in an arbitrary way. (...)

Fidelity to man requires fidelity to the truth, which alone is the guarantee of freedom (cf. Jn 8:32) and of the possibility of integral human development.

It is necessary to study this extract from the Encyclical before addressing the issue of the autonomy of science. The text establishes the priority to truth, the starting point of all good human action. The truth was and remains the major goal pursued by all honest men since the beginning of history. Texts and quotations of thinkers have endeavoured to demonstrate this goal; they express, sometimes in an implicit or veiled way, the desire or concern to progress in the knowledge of the truth. Science, for its part, has brought different kinds of knowledge, but which does not make it possible to advance beyond their own limitations. We must therefore remember how human knowledge, from the Renaissance onwards, has become increasingly autonomous and independent of a given conception of the world. By way of a summary it could be said that:

- The Age of Enlightenment established the autonomy of science and the objective observation of nature; systematic measurements and experimentation laid the foundations of physics, chemistry and the life sciences.

- The positive sciences emerge and are rapidly taking advantage of advances in mathematics which, as a speculative science, had already started to develop.

- The scientific method has been established. It makes it possible to obtain results that can be proved by experimentation and which, in their turn,

will offer a basis on which to construct scientific laws of great importance, accompanied by possible applications. But the validity of these laws is limited to the field of experimentation.

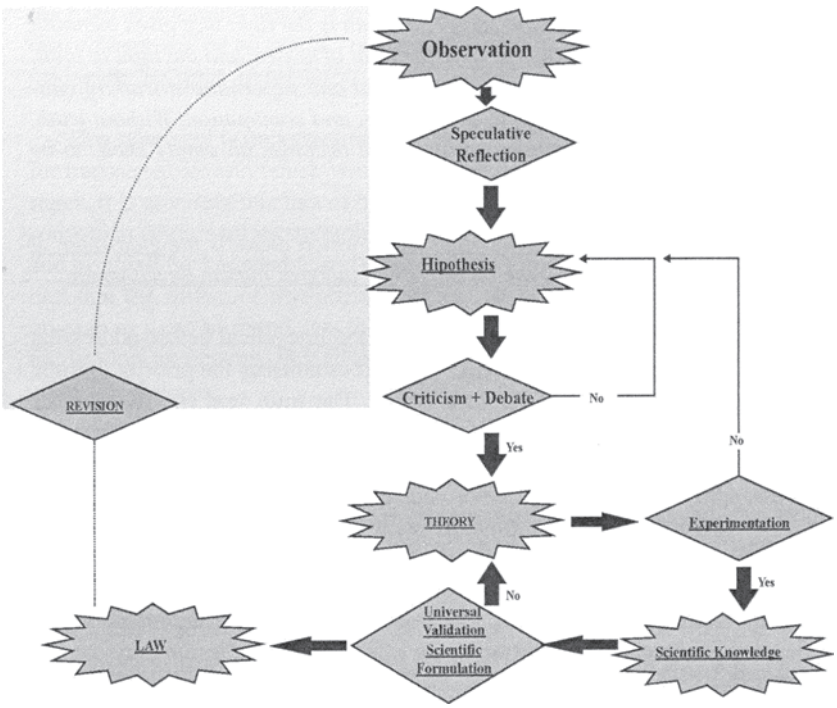


Figure 2

Figure 2 shows the basic diagram of the «scientific method» which is, in fact, a knowledge generation loop – we can compare it today to the inference engines in the field of expert systems. But it is a closed loop, reductionist and one which, without taking this limitation into account, could lead to making the mistake of drawing conclusions that would go beyond the Limits of the methodology itself.

The great success of the scientific method was the vast and virtually rapid production of knowledge in the field of the positive sciences, which gave rise to a rapid technological development, resulting in the Industrial Revolution.

Science and technology seem to offer, or could succeed in offering, answers to all the questions of humanity. All problems are considered almost exclusively in terms of scientific logic and in agreement with the forecasts that the budding economic science makes possible. Statistics can also predict and anticipate the behaviours of the major human groups.

Insofar as science and technology seem to have an answer to everything, a logical positivism is gradually gaining ground in society, while the capacity of every human person to ask the four major questions outlined above is gradually disappearing, even though, deep down in our minds, we have been seeking to answer the main question of Pilate to Jesus in the Praetorium: What is truth?

4. THE EXPLOSION OF TECHNOLOGY AND THE MAJOR CRISES OF THE 20TH CENTURY: THE TWO WORLD WARS

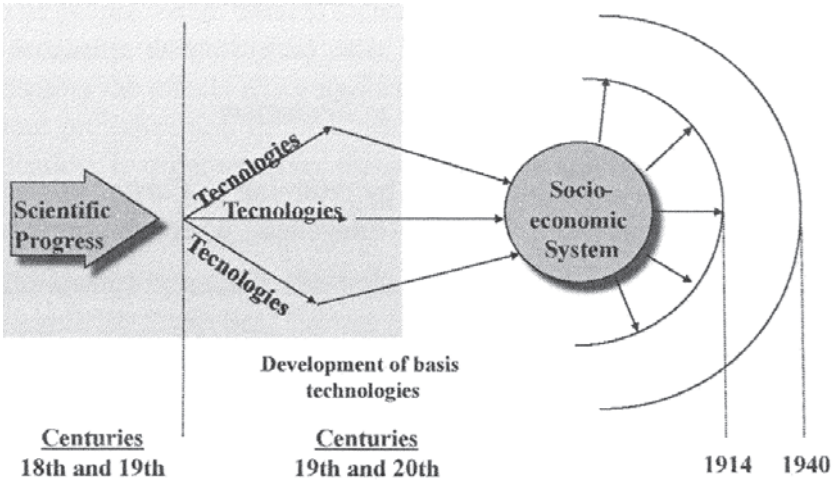


Figure 3

We observe in this diagram how scientific progress was the basis for the Industrial Revolution and also, without a doubt, of its positive effects. Having said this, its impact on an immature socio-economic system posed significant problems. In fact:

– The vast advances in scientific knowledge of the l 18th and 19th centuries gave rise to a strong industrial and economic development in what would later be called the First World.

The industrial society emerged and in its turn became an accelerator of technological development. All of this was expressed by significant progress with severe crises of assimilation of this growth on the part of society, leading to strong social tensions and the major disasters of the 20th century.

Furthermore, it should be highlighted that the technologies which progressed and expanded the most rapidly were those related to armaments, insofar as war seemed inevitable.

– The economic crisis of 1929 and the two World Wars gradually undermined the blind belief in science and technology. Many men and women, who

were in fact faced with a Europe in ruins, asked again, deep in their hearts, the four questions we posed at the beginning of this reflection.

Furthermore, these same questions emerged, although often implicitly, in the existentialist trends which were so fashionable in the period after the end of the Second World War, until in May 1968, ecologism appeared as a social movement.

5. FROM FAITH IN SCIENCE AND TECHNOLOGY TO ECOLOGISM

It seems relevant to begin this chapter by returning to *Caritas in Veritate* with an extract from Paragraph 69 of the Encyclical, where the humanistic roots of technology are emphasised.

Caritas in Veritate (69):
(...) Technology – it is worth emphasising – is a profoundly human reality, linked to the autonomy and freedom of man. In technology we express and confirm the hegemony of the spirit over matter. The human spirit, «increasingly free of its bondage to creatures, can be more easily drawn to the worship and contemplation of the Creator». Technology enables us to exercise dominion over matter, to reduce risks, to save labour, to improve our conditions of life. It touches the heart of the vocation of human labour: in technology, seen as the product of his genius, man recognises himself and forges his own humanity. (...)

Caritas in Veritate tells us that the Gospel and the Church do not turn their backs on technology and highlights the value of Renaissance humanism, laying stress on the freedom and the autonomy of man, which, in fact, are the means God has given him to complete the wonderful work of Creation. It is appropriate here to recall Blessed Llull, who makes the Philosopher who is teaching the disciple say with regard to iron (13th century): *«It is better to have iron in the ploughshare (technology) than gold or silver in the coffers».*

Further on, in Paragraph 70 of Chapter Six, the Encyclical warns against the risks of the self-sufficiency of technology.

Caritas in Veritate (70):
Technological development can give rise to the idea that technology is self sufficient when too much attention is given to the «how» questions, and not enough to the many «why» questions underlying human activity. For this reason technology can appear ambivalent. Produced through human creativity as a tool of personal freedom, technology can be understood as a manifestation of absolute freedom, the freedom that seeks to prescind from the limits inherent in things.

The proper use of what is technical (here the term «technical» also includes economic technologies) calls for a critical mind, wisdom and foresight concerning the effects of its application. In other words, it is always necessary, without prejudice and in all honesty, to question the why of a technological application.

In order to do so, the cross-cutting and ethical analysis of the problems addressed is essential, including the transcendent dimension of human persons and their supreme value. Technology, the fruit of human creativity, should always be used in the light of deeply humanistic criteria. In the same Paragraph, the Encyclical *Caritas in Veritate* addresses the significant question of globalisation and the risk that it may carry in not taking into consideration the individuality of the human person, an essential value of Humanism.

The process of globalisation could replace ideologies with technology, allowing the latter to become an ideological power that threatens to confine us within an a priori that holds us back from encountering being and truth. (...)

The «technical» worldview that follows from this vision is now so dominant that truth has come to be seen as coinciding with the possible. (...)

Technology is highly attractive because it draws us out of our physical limitations and broadens our horizon. But human freedom is authentic only when it responds to the fascination of technology with decisions that are the fruit of moral responsibility.

Furthermore, Paragraph 71 of the Encyclical *Caritas in Veritate* is of the greatest importance at the moment of laying the ethical and philosophical foundations of the concept of sustainable development, now peddled by all and which is used and abused as it has an appealing connotation, without really analysing its ethical justification.

Caritas in Veritate (71):
This deviation from solid humanistic principles that a technical mindset can produce is seen today in certain technological applications in the fields of development and peace. Often the development of peoples is considered a matter of financial engineering, the freeing up of markets, the removal of tariffs (...). All these factors are of great importance, but we have to ask why technical choices made thus far have yielded rather mixed results.

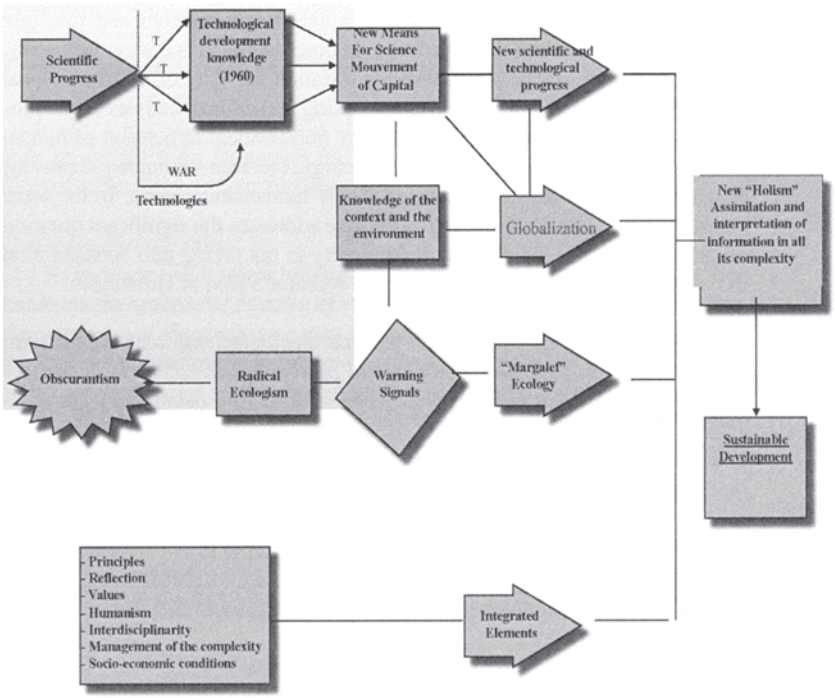


Figure 4

Figure 4 is aimed at representing both the evolution of knowledge and technology and the reactions and social movements that emerged in the late 20th Century and which are still present today. Simple logic leads us to conclude that it is necessary to include ethical values and the very vocation of human persons for transcendence as essential elements for progress in the service of the development of all the human persons of our century and of the centuries to come. We would therefore advance towards an ethically sustainable development where *decisions* would be taken in considering global implications and values on a much broader and more complete scale. While we have observed and continue to observe non-sustainable progress when technical criteria are called for, without any consideration other than that of an economic order and power -even though these criteria are assumed or embellished with partial and questionable arguments concerning development.

Once again we have recourse to the Encyclical *Caritas in Veritate*; this, in fact, aids us to understand Figure 4 and suggests valuable reflections.

Caritas in Veritate (71):
Development is impossible without upright men and women, without financiers and politicians whose consciences are finely attuned to the requirements of the common good. Both professional competence and moral consistency are necessary. When technology is allowed to take over, the result is confusion between ends and means, such that the sole criterion for action in business is

thought to be the maximisation of profit, in politics the consolidation of power and in science the findings of research.

These few lines express perfectly with words what we were trying to represent in images in Figure 4. We would, however, like to highlight, the last words of this extract relating to scientists and emphasising their responsibility. How often we scientists, filled with wonder at the results of our research, do not hesitate to draw conclusions which exceed the very techniques we have used! This happens when with new research methods at our disposal and between enthusiasm about the results obtained and the creativity of the communicator, raise false expectations or even false hopes. But there have been more serious cases when, for example, in order to have access to funding, the importance of the objectives pursued has been exaggerated. In the framework of certain environmental studies it could happen that the exaggeration of the results obtained and the interpretations and the forecasts established create unnecessary social concern.

We also find in Paragraphs 76 and 77 of the same Encyclical, a clear allusion to the integral humanism that we will mention further on and a warning about the supremacy of technology.

There cannot be holistic development and universal common good unless people's spiritual and moral welfare is taken into account, considered in their totality as body and soul.

The supremacy of technology tends to prevent people from recognising anything that cannot be explained in terms of matter alone. Yet everyone experiences the many immaterial and spiritual dimensions of life. Knowing is not simply a material act, since the object that is known always conceals something that goes beyond the empirical data.

Tue despotism of technology cannot, in any event, extinguish or expunge the vocation of the human person to transcendence or the awareness that he exists and will always exist beyond a frontier that has not yet been crossed. It is precisely this tension, this questioning or constant challenge that gives the human person his greatness and motivates him, in a spirit of solidarity, to surpass himself as well as to excel in his scientific and technological dimension from and in his own globality. It is in this dimension that we must constantly recognise errors and limitations not seen in the initial perspective. This is confirmed by the fact that precisely in this field, a new limitation, which is almost imperceptible beforehand, still appears. This explains, for example, the recent cases of bans on products and techniques, the application of which had resolved serious problems at one time or another; but time and even scientific development itself have pinpointed the problem s and the negative impact concerning their use. DDT (l,l,l-trichloro-2,2-bis (p-chlorophenyl) ethane), is a classic example of this. At the end of World War Il, the insecticide had made it possible to eradicate malaria in a large part of Europe. However, ecology and chemical science alerted us about the serious impact of this product on the environment, given its generalised use, which resulted in reserving it for only

really exceptional cases. This illustrates the constant progress of science and technology between *trial and error*, and is also an example of the potentially incomplete character of technological successes. The case of DDT clearly demonstrates the need to continuously review our responses to the challenges of life at every moment and in all circumstances.

Even if a few years ago we were able to say: «there is no philosophy, there is only science» (more specifically, Rudolf Carnap argued that philosophy has been reduced to the logic of science), today ecology, with its cross-disciplinary requirements, would lead us to affirm that at heart all scientific knowledge requires philosophy and that this is the first step towards using a technology that is combined with wisdom.

6. THE NEED FOR A NEW HUMANISM

As shown in Figure 4, the component entitled *Values* seems essential but it should be added that this answers a general appeal on the part of society. This need seems evident through the many initiatives of circulation, extension and application of ethics in all the fields of human activity. This reality gives rise to a number of questions:

Have we forgotten Renaissance humanism?
Is the classical humanism of the Renaissance sufficient to manage wisely the challenges of knowledge and, more important, those of globalisation?

In the first half of the last century, shortly before the Second World War, we find appeals for a new humanism as an alternative to the two major political movements and trends of thought that would clash dramatically in Europe and the world: National Socialism and Communism, each accompanied by its variants. Jacques Maritain brilliantly formulated a new perspective on humanism, Christian humanism, in his important work *Integral Humanism: Temporal and Spiritual Problems of a New Christendom*. This integral humanism gradually consolidated itself, incorporating new expressions resulting in the term of Personalism, associated with the person and the philosophy of Maritain. Personalism played a major role in Vatican II and is to be found as an almost constant bedrock in the Encyclicals of Pope Paul VI, John Paul II, and today in those already quoted of Benedict XVI.

But this new humanism which, without any doubt, starts with integral humanism and Personalism, should not be limited to the texts of wise Encyclicals or be confined to a fine philosophy, but must rather penetrate the roots of our society at all levels to enable humanity to gradually acquire the lucidity and wisdom to use its knowledge and the wonderful technical tools it has created in a sustainable way to serve the human person.

The title of the first part of the Encyclical *Populorum Progressio* is: *On the Development of Peoples*. Its conclusion explicitly mentions Maritain in affirming: *«The ultimate goal is a full-bodied humanism»*. This humanism, if it is truly full-bodied, reaffirms confidence in the human person, the major work

of the Creator and the basis of the most strictly Christian virtue: Hope, a virtue that our globalised reality urgently needs and that only this new humanism can sow for all human persons, over and above different beliefs. In the light of Vatican II, this seed will only need a human heart that is open and ready to grow.

By way of an epilogue to this reflection, we append some texts that will help us to be imbued with Christian Hope.

«Special attention should be given lo this gift (Hope), especially in our day. Today many people, including quite a few Christians, are floundering in the illusion and myth of an unlimited capacity for self-redemption and self-fulfilment, and the temptation to pessimism from the experience of frequent disappointment and defeat».
John Paul II (General Audience of 3 July, 1991).

«God's love calls us to move beyond the limited and the ephemeral, it gives us the courage to continue seeking and working for the benefit of all, even if this cannot be achieved immediately and if what we are able to achieve, alongside political authorities and those working in the field of if economics, is always less than we might wish».
Benedict XVI (*Caritas in Veritate*, Conclusion, 78).

In addition to wisdom, these extracts are overflowing with beauty and poetry: spiritual beauty allied with the virtue of Hope. This virtue can in no way be associated with the laziness with which, on certain occasions, Christian philosophy was reproached. Hope is the immediate consequence of Faith, in the words of Brother Roger Schutz, founder of the Ecumenical Community of Taizé, in his letter of 2003 *«[The source of hope] is in God who can only love and who tirelessly looks out for us»*. Hope does not mean an immature confidence or pessimism regarding the capacity of the human person to find solutions and contribute to the common good; it is more than a projection of what we would like to see or obtain. Hope is the seed of another way of looking at our lives, by giving ourselves to others, by avoiding concentrating it on possession and competition and by focusing on *being* rather than *having*. As we approach the end of this text, we should remember Ignatius of Loyola, one of the protagonists of the great turmoil of the 16th century quoted above, who illuminated Renaissance Humanism as well as his vocation and his work, the Society of Jesus.

As usually happens and as indicated at the beginning of this reflection, collective and human failures and vicissitudes often open the way to new perspectives: they lead us to start from scratch and, from their roots, to reconsider new ideas or paradigms. In the person of St. Ignatius Loyola, persona I upheaval coincided with the turmoil in society in his day and age. We thus rediscover the value of the human person, as Ignatius of Loyola did in proposing to his young Jesuits:

«To work as if everything depended on us...» – in this first part of his advice, Ignatius highlights the great value of every human person and his work... and

he continues his lesson of humanism – «but pray... as if everything depended on God». Faith in the Creator who will always stretch out his hand to his wonderful creature: man. But even freedom, conceded by God, requires man to turn to Him to receive the aid he is offered freely.

Even though we are already in the 21st Century and have fully assimilated the end of the Cold War, Vatican II, ecological awareness and the fall of the Berlin Wall, we are experiencing globalisation and the worst economic crisis since 1929. In just one word: a new upheaval that incites society and politicians to seek new ways of confronting the new challenges that are causing us so much concern. As it was highlighted five centuries ago, we will find our way out of this deep quagmire thanks to human genius, individually and collectively, since the eternal challenge of the mystery of our life makes us develop in the face of new major difficulties and hardships. Human knowledge, like technology, calls for and is looking for a New Humanism which, to be strong, must rely on Hope. As the conclusion of the Encyclical *Caritas in Veritate* stated in a prophetic way:

God gives us the strength to fight and to suffer for love of the common good, because He is our All, our greatest hope.

Appendix A
Soil Fertility and Water Management: CCR-IFCU Research Networks Serving Local Communities

The Centre for Coordination of Research of the International Federation of Catholic Universities is actively engaged in different lines of research, including Poverty Reduction and Development, Human Mobility, human rights and Peace Building, Intercultural and Interreligious Dialogue, Social Issues, Environmental Challenges (http://fiuc.org/en/ccr/research/list_all).

1. TRAINING TECHNICIANS TO IMPROVE SOIL FERTILITY IN DEVELOPING COUNTRIES

CCR-IFCU started in 2006 a line of international, interdisciplinary projects on experimental sciences focusing on environment and development. The first completed project in this line was the CCR-IFCU Project "Training engineers to improve soil fertility in developing countries" (*Formación de técnicos para mejorar la fertilidad del suelo en países en vías de desarrollo*), from 2006 to 2009.
This project, now completed, explored different ways of preserving agricultural land in Brazil and Colombia. In particular, an effort was made to promote educational internships, alliances with farmers and agricultural cooperatives, together with the production of good practice material. A special issue of the journal Symposium (published by the Universidade Católica de Pernambuco) is due to come out soon, compiling the scientific and technical articles by all the participating teams from the following universities:

Pontificia Universidad Javeriana (Colombia)
Universidad Católica de Oriente (Colombia)
Universidade Católica de Pelotas (Brazil)
Universidade Católica de Pernambuco (Brazil)
IQS – Universitat Ramon Llull (Spain)

The scientific and technical goals of the CCR-IFCU can be summarised as follows:

- Selecting waste that can be used as a source of organic material for use in crop soil (municipal organic waste and bio-solids).
- Study of microbiological, physical, chemical and structural aspects.
- Obtaining high-quality compost through biotechnology.
- Field studies, and studies of the yield from biotechnological compost.
- Using this compost to grow *Stevia rebaudiana*.
- Comparative study of the different types of compost used on acidic soils and the exhausted capacity for ion exchange.
- Supplying technical resources, and specific training for teams that need it.

The project also explicitly included socio-economic goals, in particular:

- carrying out an economic, social and family study of farming
- involving communities collaborating on the project fieldwork.
- considering the possibility of alternative crops in response to future challenges.
- Offering viable alternatives to illegal crops.

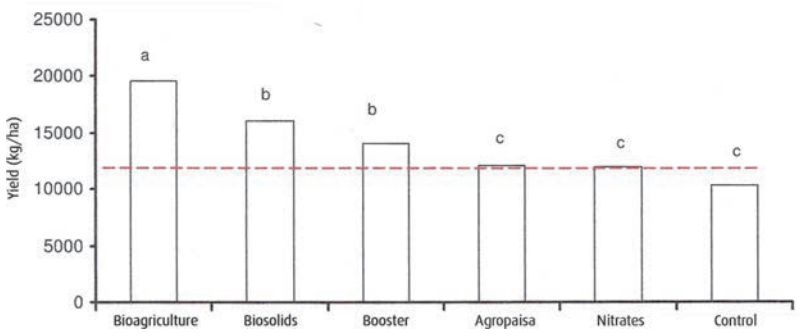
Besides scientific and technical achievements, both, such as those summarized in Box 1, there is a specific outcome worth mentioning, that is university collaboration itself. An international and intercontinental network of scientific collaboration was set up between participating universities, realizing a process of knowledge advancement among the participating universities, a process that directly involved 125 people on different capacities (lecturers, researchers, collaborators and students), with one researcher from every Latin American University benefitting of a stay at the Universidad Ramón Llull, Barcelona, to learn specialised techniques for the study of soil organic matter.

More importantly, if we add farmers and engineers involved in fieldwork connected to the CCR-IFCU research project, the number of people directly involved in research would largely exceed 125; moreover, the number of actual and potential beneficiaries of the project is much larger, as results are meant to directly improve the quality of soil and crop yields for local farmers, by making science-based, high quality practical leanings about organic matter and soil fertility available to family farmers. The Instituto Interamericano de Cooperación para la Agricultura – IICA was also involved in technology diffusion ("Iniciativa para la difusión de la materia orgánica en la agricultura").

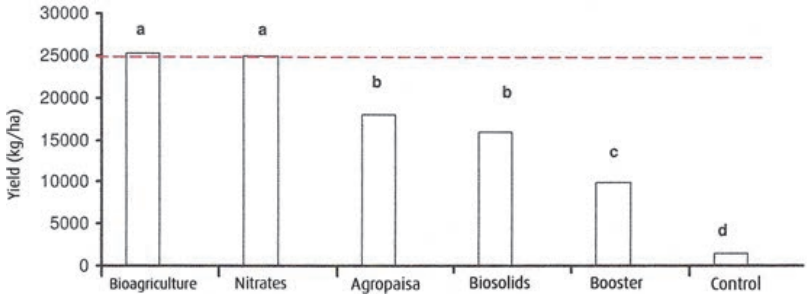
Box 2 shows the cover pages of two booklets aimed at reaching the local community's smallholders and family farmers: "*Importancia de la materia orgánica en la agricultura*", within the *Iniciativa para la difusión de la materia orgánica*, in Spanich; and "*Solos-Cartilla FIUC*" in Portuguese.

Box 1 – High quality compost and crop yields

U. Javeriana has managed to produce a high-quality compost, using a thermophilic inoculated biotechnological compost. The process is carried out at 70.8º C, which is quicker and helps reduce pathogens. Application of this compost by U. Javeriana and U. Católica de Oriente was tested for yield, with excellent results, for broccoli and for carrots. "Bioagriculture" contains compost made using the U. Javeriana technique



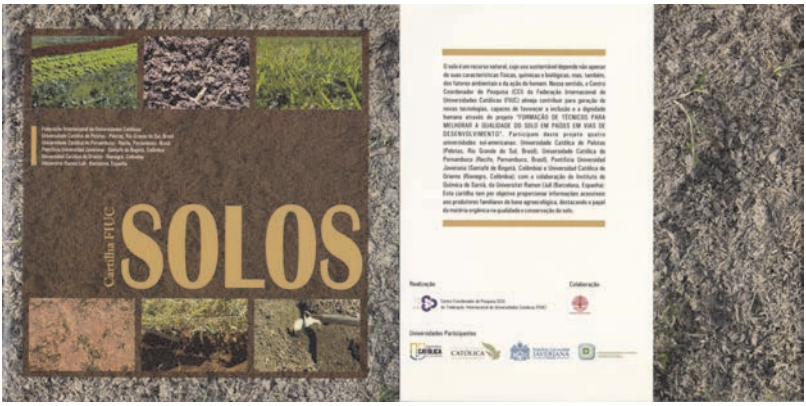
Broccoli crop



Carrot crop (Sources of organic matter)

Box 2 – Improving soil fertility by training family farmers

Two simple, scientifically accurate, booklets were distributed among farmers, both in Spanish speaking countries and in Brazil. See the covers below.



2. WATER MANAGEMENT: WATER, ENVIRONMENT AND HEALTH

A second CCR-IFCU interuniversity research project related to environmental issue is titled: Water management: Water, the environment and health – Contribution of Latin American Catholic Universities to the Protection of Water and the Reduction of Risks related to this Resource.
Sustainable water management with a view to ensuring adequate protection is vital for human development from all points of view: health, environment, spatial planning... The United Nations has included this resource among its priorities, beginning, among others, with the Millennium Development Goals, and ending, more recently, with the declaration of 2013 as the International Year of Water Cooperation.
The Center for Coordination of Research cannot ignore a problem as transcendental as this, so it has decided to begin a project focused on water to continue to capitalise on the acquisitions obtained in the field of natural and experimental sciences. With the outstanding collaboration of a pioneering Spanish institution in this field, five Latin American universities are jointly examining aspects concerning the management of this precious resource, which undoubtedly raise bigger questions and challenges for contemporary society.
The project started in October 2011, involving the following participating universities:

Universidad Católica de Córdoba (Argentina)
Pontificia Universidad Javeriana (Colombia)
Universidade Católica de Pernambuco (Brazil)
Pontificia Universidade Católica do Paraná (Brazil)
Pontificia Universidade Católica do Rio Grande do Sul (Brazil)
IQS – Universitat Ramon Llull (Spain)

Details of the project can be found at: http://fiuc.org/en/ccr/research/environmental_challenges/water_environment_and_health

The interdisciplinary dimensions of the research project include chemistry and physics of water (the water cycle); assessment of water availability (surface water, seawater, coastal water and groundwater); the hydrography of the participating teams' regions; availability of drinking water (drinking water treatment and regulations); irrigation and sewage regulations.
The goals of the research are to facilitate effective collaboration between the participating universities, creating a framework document sufficiently broad to cover the specific problems and challenges each university is facing; to foster unique contributions from each participant in the project, in accordance with specific water-related problems in each university's region; to provide reciprocal support by pooling (sharing) and transferring information, specialised know-how, technologies and tools between participating universities; finally, to promote environmental sustainability training in water use by the corresponding university communities. Commitment to collaboration and to serving local communities at all levels is in fact key to this project, as to the soil fertility one.

The project aims at producing both scientific publications and written materials intended for students and for the general public, promoting responsible use of water within society, raising awareness about water responsible use and conservation. Among the publications available for the general public, we can find a leaflet (in Spanish) to promote responsible use of water (http://fiuc.org/admin/includes/filemanager/userfiles/FICHES_PROJETS/EAU/FOLLETODEAGUAcompleto.pdf), and also a School handbook (http://fiuc.org/admin/includes/filemanager/userfiles/FICHES_PROJETS/VARIOSIII/Caderno_de_Atividades_-_Rio_GranSul.pdf) and a Facebook page in Portuguese (https://fr-fr.facebook.com/projetobelem).
Last but not least, shortly forthcoming is a joint Booklet to promote responsible use of water among local populations, being prepared by the Water project teams and soon available in both Spanish and Portuguese (Box 3) and a Facebook page (https://fr-fr.facebook.com/projetobelem) in Portuguese.

Box 3 – Front page and content of the first chapter of the Water Booklet

On the scientific side, a final joint scientific publication and specific individual research products are forthcoming, while the e-book on water management in South America – State of the art of hydric resources in Argentina, Brazil and Colombia is already available (in Spanish) (see Box 4 for the cover page and the link for downloading the publication).

Box 4 – Water Management in South America – State of the Art

http://fiuc.org/admin/includes/filemanager/userfiles/FICHES_PROJETS/EAU/LIBRO_AGUA_FINAL.pdf

Among the specific research products, we can find:

Ideal environmental design for the location and distribution of dams in the Yacuy river basin, by Prof. Nelson Ferreira, Universidade Católica do Rio Grande do Sul;

Revitalisation of the Belem river, by Prof. Carlos Mello, Universidade Católica do Parana (which university campus is built in the basin of the Belem river;

Socio-environmental study of the Capibaribe river basin and study of the "Moringa oleifera" species in water clarification, by Prof. Arminda Saconi, Universidade Católica de Pernambuco;

Assessment of the "Fenton" process through photocatalysis with titanium bioxide using activated carbon black (sourced from plants) to eliminate

organic matter from sewage, prepared by Prof. Carlos Daza of the Pontificia Universidad Javeriana, Bogota; and

Decontamination of sewage dumped in San Roque Lake. Pilot plant to purify sewage with 'biodiscs' by Prof. Adriana Bustamante and Prof. Adriana Welter of the Universidad Católica de Córdoba (see Box 5, with images of the San Roque Lake project, illustrated to participants by Professor M. Gassiot during the Milano 2014 Summer School).

Box 5 – Water management, San Roque Lake




M. Gassiot, PowerPoint Presentation, Milano, Sept. 2014

Eradicating Poverty: Human Dignity at the Core of Policy Dialogue

Simona Beretta[1]

'Treat people as they want to be and you help them become what they are capable of being.'
(Johann Wolfgang von Goethe)

May 1st 2015: the Universal Expositions EXPO2015 opens, titled "Feeding the Planet, Energy for Life" opens in Milano.
September 25th-27th 2015: the high-level plenary meeting of the General Assembly of the United Nations is convened in New York, for adopting the post-2015 Sustainable Development Goals (SDGs).
November 30th to December 11th: the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) is to be held in Paris.
July 13th-16th 2015: the Third International Conference on Financing for Development recently convened at Addis Ababa, concluded by solemnly affirming "*strong political commitment to address the challenge of financing and creating an enabling environment at all levels for sustainable development in the spirit of global partnership and solidarity*."
Year 2015 is thus a very special moment. Time for assessing processes and outcomes of the MDGs; and for understanding whether, how and why progresses were made. Time to spell out the post-2015 SDGs' Targets in details, into a true policy perspective – and everybody knows that details can make a lot of difference.
Year 2015 is a signpost for international cooperation, partnership and solidarity. Or isn't it?
This special moment may simply end up with a consensus on a new, more complete and encompassing, "book of dreams" for the future of our world. More cynically, this consensus may result from "aggregation": individual actors – countries, public agencies and non-governmental organizations – agree on a long list of targets, each loosely defined so to accommodate all perspectives, to preserve or expand their political and economic space**,** to promote their special priorities and agendas, to gain political visibility or some command over resources.
We on the contrary need to hope and work and for more than that. People, real people with a face and a name, are suffering from hunger, deprivation, injustice, denial of elementary freedoms, environmental degradation. Heeding their call means activating and decidedly supporting those processes that can effectively lead to ending poverty and hunger. Here, in a sense, all that matter are the details. Real names, real faces. Choosing reality – with all its

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contradictions – as the starting point for cooperation, partnership and solidarity provides a realistic, unitary starting point for spelling out policies details. In a sense, the political framework shifts from *mapping the policy space***,** so that each actor's particular agenda can be adequately represented in the overall emerging consensus, to *sustaining processes* of development, building on human dignity and sustaining bottom-up initiatives.

"(T)*ime is greater than space. This principle enables us to work slowly but surely, without being obsessed with immediate results. It helps us patiently to endure difficult and adverse situations, or inevitable changes in our plans. It invites us to accept the tension between fullness and limitation, and to give a priority to time. One of the faults which we occasionally observe in sociopolitical activity is that spaces and power are preferred to time and processes. Giving priority to space means madly attempting to keep everything together in the present, trying to possess all the spaces of power and of self-assertion; it is to crystallize processes and presume to hold them back. Giving priority to time means being concerned about initiating processes rather than possessing spaces*." (Pope Francis, *Evangelii gaudium*, 2013, n. 222-223)

How to actually initiating processes of cooperation, partnership and solidarity is a challenge for all sorts of actors, including Universities. The dialectic "space *versus* time" (holding power *versus* sustaining processes) applies quite clearly also the University environment, that we know from within. Scientific research and technology development risk of being self-referential activities, ultimately driven by power logics, that tend to produce all sorts of technocratic ideologies. Unfortunately, grand design may easily end nowhere; technocratic approaches may at best address one issue at a time, and often risk overlooking essential interdependencies, thus providing short sighted solutions. We can name a number of occasions in which top-down technocratic policies changed one situations, usually producing the short run impacts that were hoped, along with producing unexpected and often undesirable long run consequences on the complex fabric of reality (for example, in the environmental and social dimensions).
"The globalization of the technocratic paradigm", as the title of chapter II of the encyclical letter Laudato si' reads, works "according to an undifferentiated and one-dimensional paradigm. This paradigm exalts the concept of a subject who, using logical and rational procedures, progressively approaches and gains control over an external object. ... a technique of possession, mastery and transformation" (Laudato si', n. 106). Technocratic approaches are dangerous, when based on presumptions of self-sufficiency; however, scientific research and technology development remain indispensable. We may be convinced that no strictly material, technocratic action can be trusted to provide a full answer to human needs; but good intentions do not deliver either! The devil is in the details, hence ending poverty and hunger is no easy task.
We are convinced that conjugating scientific and ethical dimensions is key for transformative agency, so that people themselves can initiate processes of sustainable development. Depending on how you conceive the human being and nature, you will pursue different strands of scientific research, technological developments, practices and policies. That is: each human action originates

from, and expresses, what are the ultimate reasons for human decisions – hence, ethics it is not an accessory to be nicely put ***besides*** scientific enquiry and technical expertise; rather, ethical choices drive scientific research, technology development, policy implementation from ***within***.
We hope this e-book can provide useful scientific and technical perspectives on how policies and practices can sustain poverty eradication, promoting access to food and access to land, ethically oriented towards promoting integral development of each and all members of the human family. We think all policy options and cooperation practices need to uphold the basic tenet for realistic cooperation, partnership and solidarity: namely, human dignity.

1. POLICIES BASED ON HUMAN DIGNITY

The language of human dignity helped forging consensus in the immediate post-WWII international debate, becoming the theoretical the pillar of the 1948 Declaration of Human Rights. The practical implication of human dignity for institutions and policies are addressed by crucial character of that period, Eleanor Roosevelt, with these words:

"Where, after all, do universal human rights begin? In small places, close to home—so close and so small that they cannot be seen on any map of the world. Yet they are the world of the individual person: the neighborhood he lives in; the school or college he attends; the factory, farm or office where he works. Such are the places where every man, woman, and child seeks equal justice, equal opportunity, equal dignity without discrimination. Unless these rights have meaning there, they have little meaning anywhere". (Eleanor Roosevelt, In Your Hands, Address at the United Nations, March 27th, 1958, www.udhr.org/history/inyour.htm)

With a slogan, we may say that human rights and development are 'relational' notions. They either materialize within concrete relations, when human dignity is upheld and realized; or they simply do not. The notion of human dignity is "relational" in its essence: not only because persons live in the network of their meaningful relations, but because their inner self flourishes and matures within the constitutive tension between the individual and the community, the "I" and the "we".

The notion of development is also 'relational' in its essence. Development is a dynamic, non-deterministic process driven by concrete human beings relating with nature; with their contemporaries; with their own cultural and religious tradition and with other traditions, in a healthily 'plural' world; and finally, all of the above depends on the how the present generation relates to future generations. All these relations – that may be of "good" quality but also of very "bad" quality make the difference in all material dimensions of life: production, consumption, growth. Development consists in a change 'for the better' in the relational dynamics described above; it is the process itself, not the destination. Economic development, in fact, cannot be satisfactorily represented by quantitative expansions of material entities – no matter how inclusive and sophisticated the list of material entities. Moving 'beyond GDP' for measuring

development obviously makes a lot of sense, but it remains a partial effort if it simply ends up including in the calculations other 'goods' (say, acres of forests) and subtracting 'bads' (say, levels of pollution). Development must be about "being" and "feeling" more human, not just knowing and having more.

Empirical evidence, anecdotal evidence and even simple observation of one's experience show that the quality of relations – whether human dignity is recognized and promoted or not – makes the difference for sustainable development of individuals and communities. This is most evident in extreme disadvantage situations and in emergencies, where stable relational networks s can provide support when it is virtually impossible to rely upon formal institutions. *Vice versa*, the experience of poverty consists not only in deprivation of material means, but in relational and symbolic deprivations: "shame and humiliation"[2]: this is how poor people often answer, when they are asked to define their own poverty.

Pope Francis, in his Message for Lent 2014 wrote: *"**Destitution** is not the same as poverty: destitution is poverty without faith, without support, without hope. ... **Material destitution** is what is normally called poverty, and affects those living in conditions opposed to human dignity: those who lack basic rights and needs such as food, water, hygiene, work and the opportunity to develop and grow culturally. ... No less a concern is **moral destitution** ... How many people no longer see meaning in life or prospects for the future, how many have lost hope! And how many are plunged into this destitution by unjust social conditions, by unemployment, which takes away their dignity as breadwinners, and by lack of equal access to education and health care."*[3]

Policies aimed at ending poverty and hunger thus entail addressing both issues material deprivation, and deprivation of human dignity: poor people need to be protagonist of their own progress; and they need to find reliable partners in their effort. The poor themselves, and no one else, know what they really need, and how they intend to meet those needs, in the specific situation they experience, in the time and space they actually live.Their dignity demands that they be in charge of their own flourishing – development is in facts both a right, and a duty. This perspective is quite reasonable: only the poor themselves can really 'own' development actions, and such ownership is key to sustainability.

Policies also matter, but they play an asymmetric role: good policies may help, but not automatically guarantee results, that crucially depend on the quality of societal relations; inappropriate policies, on the contrary, are very likely to harm in all cases. Redistributive and assistentialist practices are a point in case: where the poor are simple recipients of goods and services provided by "expert" outsiders, redistribution can have short run impacts at best.

While the poor alone can be protagonist of development, they cannot do it alone. Here comes the second dimension of human dignity based policies: true partnership. The essence of partnership consists in building personalized and durable relationships that build on human dignity, foster community life and sustain reciprocal support. Partnership is a very ambivalent word, used

[2] See http://www.ophi.org.uk/research/missing-dimensions/social-connectedness/without-shame.

[3] (http://w2.vatican.va/content/francesco/en/messages/lent/documents/papa-francesco_20131226_messaggio-quaresima2014.html)

with a variety of meanings within the world of international cooperation and development. Here, we take its elemental meaning: being with, and supporting those who actually covers the "last mile", reaching out to the least privileged. In sum, the intrinsically relational nature of human dignity calls for policies and institutions that decidedly take side for realizing bottom-up, community-based initiatives for ending poverty and hunger. This is well documented in this e-book, with reference to the specific issues of access to food, and access to land especially for the most vulnerable categories: women, indigenous people, and *a fortiori* indigenous women.

2. POLICY IMPLICATIONS OF ACCESS TO FOOD, ACCESS TO LAND

Policies supporting bottom-up, community-based initiatives can rely upon the elemental experience of the subjective dimension of human work. Human work drives development, not in a mere instrumental sense. Human work is qualitatively different from application of animal or machine work: the subjective dignity of human work makes all the difference in development. Economic thinking has been aware for a long time that motivations, expectations and beliefs are powerful determinants of human action, sometimes stronger than material determinants. No risky enterprise, no investment in human and social capital, no collective action could take place out of adequate motivations, expectation and belief. Ignoring this subjective, non-material dimension of economic actions condemn both scholars and policymakers to inability to understand development. Development requires a personal élan of freedom, driving agency, changing reality for the better; moving ahead, not passively enduring circumstances, or waiting for anonymous welfare provisions.

The centrality of work in all development processes is best illustrated by the case of agricultural work, and especially the work of smallholder farmers, who provide a key contribution to food security in low income countries, also because of their high productivity as compared to large scale farming. Smallholders' work is key for enacting environmental and development-friendly agricultural production and investment; for protecting bio-diversity, so precious in a long-run perspective; for diversifying production and increasing resilience of local communities, for reducing food and income insecurity and providing resources for answering different needs. As shown in the final part of this e-book, smallholders' work can help reduce soil degradation, if they can access good quality techniques for soil fertilization, that once learnt can be easily locally diffused.

Supporting smallholders' work would be no small contribution to ending poverty and hunger; they are about 500 million smallholder farms worldwide, and more than 2 billion people depend on them for their livelihoods. They produce about 80 per cent of all the food consumed in Asia and sub-Saharan Africa. Hence, smallholder farmers' work id key to ending hunger; but they cannot do it alone – nor thanks to mechanistic, technocratic approaches. For example, a line of policy maintains that they simply need external investments, creating the conditions to move them out of subsistence farming, into the marketplace. This may be, but it may not happen; or their market success may be short-lived and exposed to negative consequence of power asymmetries so frequent in the marketplace. Even for smallholders' promotion, we would again underline

the importance of true partnership, that originates in recognizing and upholding human dignity of each worker, and community initiatives.

Human work is a source of income, but it is much more than that: it is a source of identity, inclusion, acknowledgement, recognition, independence: all of them being essential dimensions of human dignity[4], offended by marginalization, exclusion, excessive inequality. Dealing with exclusion and inequality, as impediments to a 'decent' (dignified, dignifying) work and life, means more than addressing unequal outcomes in a remedial way, with top-down redistribution. Dealing with inequality and exclusion begins with concretely retrieve their causes in power asymmetries.

There are many sources of power asymmetries. For example, the simple fact of playing different roles in economic interaction may lead to asymmetries: creditors and debtors, for example, cannot exist one without the other, but debtors typically bear a disproportional share of adjustment costs, at times of distress. Another obvious source of power asymmetries consists in economic size – this dramatically change the game between nation states, as between economic actors. In the marketplace, the more asymmetric are the power conditions of agents, the more likely it is that actual prices will deviate from any notion of "just" prices. For example, food prices in small local markets can be heavily (and unduly) influenced by financialization of agricultural markets; internal transfer prices decided by large enterprises may seriously affect smallholders' incomes, when their products enter complex supply chains.

The most profound sources of uneven power structures, however, are represented by asymmetric access to key resources such as land and water, or financial and insurance services; and by institutional, social and cultural constraints in accessing safe and sufficient food, health and education; last but not least, by unequal access to technology and information. All these asymmetries tend to build upon themselves, with self-reinforcing circular causation mechanisms that tend to weaken the weakest and reinforce the powerful. Inequitable 'structures of power', moreover tend to seep in and shape local and national policies, crystallize into extractive[5] social, economic and political institutions.

The single issues to be urgently dealt with for addressing inequality in access to food is definitely access to land, as the title of this e-book makes clear. Land is both a scarce and precious resource, hence a source of power, and land can also be a source of conflicts. What we know for sure is that many causes, such as demographic pressure, land expropriation for mining or for large scale land acquisitions, privatization of common land, large scale mechanized crop production, tend to jeopardize land tenure for the poor. Rural families end up occupying marginal, low-productivity land; and often their land occupation is highly unsecure. Property rights, whether formal or informal, individual or communal, remain undefined and are easily violated. Now, inadequate institutions and policies for granting equitable access to land represent a severe

[4] Donna Hicks, *Dignity. The essential Role it Plays in Resolving Conflict*, Yale University Press, September 6, 2011.

[5] Daron Acemoglu, James Robinson, *Why Nations Fail. The Origins of Power, Prosperity and Poverty*, Crown Publishing Group, New York, 2012.

violation of human dignity. Land, in fact, is much more that a natural resource with high economic value: it is a source of personal and community identity, and it represents a vital relationship connecting past and future generations.

3. COOPERATION, PARTNERSHIP AND SOLIDARITY: A 'FEMININE' ANALOGY

Year 2015 is a great opportunity for policy dialogues that seriously address the possibility of our living-together as members of the one human family, as living-together is the elemental dimension of the global common good. In other words, the basic end of international cooperation consists in making it possible that all-of-us live together, as a precondition for finding ways and means to preserve and promote specific common goods, such as environmental goods – land, water, air, natural resources; and other essential public goods such as food security, health, education, decent work, social and political participation. By analogy, the plurality of institutions and organization involved in year 2015-related policy dialogue may experience living-together as precondition for sharing their technical expertise and their practical experience, thus collaborating beyond 'mapping spaces' in order to activate development processes. In our diverse and changing world, the co-existence of many diverse institution may be precious for institutional innovation, just like biodiversity is fundamental for preserving biological life. There is in facts no single path towards realizing equitable institutions, and existing structures require continuous re-generation.

Dialogue must be engaged at all levels: within nation states and across nations (in multilateral institutions, in regional institutions, in self-aggregating groups such as G7/8, G20...); but also within other crucial global players (firms and institution which hold economic and financial power; but also scientific and technical power; agents that hold communication power). Non-strictly-political forms of power, in today's world, play a huge role, and need to be involved within the process of achieving moral consensus over global issues such as eradicating poverty and caring for our common home. Activating processes of encounter and dialogue at all levels (including scientific and technical cooperation) is indeed the most plausible path to a 'decent'[6] state of the world.

"*In a culture which privileges dialogue as a form of encounter, it is time to devise a means for building consensus and agreement while seeking the goal of a just, responsive and inclusive society. The principal author, the historic subject of this process, is the people as a whole and their culture, and not a single class, minority, group or elite. We do not need plans drawn up by a few for the few, or an enlightened or outspoken minority which claims to speak for everyone. It is about agreeing to live together, a social and cultural pact*." (Pope Francis, *Evangelii gaudium*, 2013, n. 239).

[6] Avishai Margalit, *The Decent Society*, Harvard University Press, 1998: a decent society, or a civilized society, is one whose institutions do not humiliate the people under their authority, and whose citizens do not humiliate one another.

In a book like this one, it is immediate to underscore the importance of *food* in human encounter. Food rites, symbols, stories are essential in building personal and collective human identity. Sharing food allows sharing deeper experiences that resonate in others' own experiences, favouring the encounter across different traditions and cultures for finding ways to live together. No wonder the Latin expression for living-together, that is *convivium,* also means banquet – the common meal that allows encounter and sustain the process of living together, encompassing both material and symbolic dimensions.

Convivium presupposes a common grammar for dialogue, that is the reciprocal recognition of what human being have in common. We share very elemental experiences indeed: we all come to life not by our choice, and we finds ourselves in a world which is given to us, which has been already prepared for us. As new born babies, we all experience being fed as a necessary condition for survival; similarly, as adults, we depend on the generosity of land as a necessary condition for our survival. In sum: we all share the elemental experience of living by *receiving*. In a sense, none of us really owns anything, except our own dignity. Isn't this a powerful basis for dialogue? One that can perhaps move beyond 'mapping spaces' to truly activate development?

"*(O)ur common home is like a sister with whom we share our life and a beautiful mother who opens her arms to embrace us. "Praise be to you, my Lord, through our Sister, Mother Earth, who sustains and governs us, and who produces various fruit with coloured flowers and herbs".* (Pope Francis, *Laudato si'*, 2015, n.1) This opening sentences of the recent encyclical letter Pope Francis *Laudato si'*, quoting St. Francis Canticle of the Creatures, speaks of Mother Earth, and Sister Earth.

There is a sort of female genius in human relations with nature, human relation with food and land; and also, by analogy, with development. There is an exquisitely female genius in receiving a small seed, in preserving it with care, and then giving birth to a new life. This story can describe farming, but also childbearing, and by analogy also striving for realizing inclusion and justice. After all, we receive our human dignity as a precious gift, and building on it we can create and regenerate 'decent' forms of living-together, inclusive and equitable institutions.

There are interesting analogies between generation and development[7], as generation is more than giving birth: it requires taking care over time of new things and relations. What does this analogy imply for cooperation, partnership and solidarity, in year 2015? Generation is a process where innovations of all kind – including institutional innovations – are conceived, realized and then taken care of, in a development process that is open ended by definition. Ending poverty and hunger will not ensue from applying piecemeal techniques, but from the truly generative process of recognizing human dignity as a precious seed, and caring for its full flourishing.

[7] Simona Beretta, Love and Generation: A Powerful Metaphorfor Understanding Economic, Social, and Political Innovation, in *Love on a Fragile Thread,* Edited by F. Merlini, L.E. Sullivan, R. Bernardini, and K. Olson – Eranos Yearbook n.70, 2009/2010/2011, Daimon Verlag, 2012, pp. 475-499.