

Struggling against Food Waste in the Mediterranean Region to Strengthen Food Security

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In the vast debate on food security, the issues of food loss and food waste have become central. Whereas many concerns exist regarding the evolution of the supply and demand for agricultural products in the coming years, the struggle against losses and waste is turning out to be one of the main levers to pull in attempting to reduce food insecurity in the world. Such an issue also affects the Mediterranean Basin. All the countries in this region are facing the following difficulty: they need to produce more with fewer resources and thus use resources more sparingly.

The problem of food loss and food waste has various dimensions (social, economic and environmental) and should be approached from three different yet complementary angles. Indeed, combining the analysis of natural resources, production and knowledge allows the matter to be situated more globally within the perspective of sustainable development, where humans become the priority again.

Conserving Natural Resources

Food waste does not just mean the loss of a substance that is vital to humans, but also the squandering of precious natural resources (land, water, energy, forests, biodiversity) indispensable for a sustainable food supply. Not maintaining an efficient land base, the water necessary for agricultural activity, forest areas that contribute to attenuating climate change, energy supplies in the field of food production and transport, and Mediterranean biodi-

versity means undermining major elements of food security. Managing these issues well is thus decisive on the road towards a global strategy of struggle against waste.

The depletion of natural resources is a factor contributing to tension and destabilisation in the Mediterranean Region. The water problem is well known: unequally distributed among countries and territories, water is increasingly coveted. Its role remains important for agriculture, since 80% of this 'blue gold' is used for irrigation in Middle East and North African (MENA) countries. To mobilise greater amounts of water in the Mediterranean Basin, the solution is not to hope to find more, but on the contrary, to limit waste in order to increase the available volume. In fact, large amounts of water are lost due to lack of appropriate techniques or modern infrastructure. Greater human engineering and technology are thus necessary to develop more efficient irrigation systems. In the process of food production, water is a key element throughout the food chain. The total volume of water used every year to produce lost or wasted food (250 km³) is equivalent to the annual flow of the Volga River (Russia), or three times the volume of Lake Geneva. To obtain one kilogramme of cereals, a staple of human consumption, some 13,000 litres of water are required. To measure the ensemble of water supply necessary for food production or industry and evaluate the environmental footprint of a product, the concept of 'virtual water' has been proposed. It certainly reflects the search to decrease waste with relation to the resources available to a country or operation.

The issue of soils is also frequently discussed. The land resource, like water, is, of course, strategic for agriculture. The United Nations, moreover, declared 2015 the International Year of Soils, following the Year of Family Farming in 2014, indicating to what point the land constitutes a major pillar of develop-

ment for rural communities. Nearly 1.4 billion hectares of land, in other words, 28% of the agricultural surface area of the world, currently produces food that is later lost or wasted. This 'land' waste, together with the encroachment of urbanisation upon arable land occurring throughout the Mediterranean Basin, should thus be taken seriously. Again, it seems surprising to be so concerned about new agricultural areas to be farmed (the famous land reserves of the planet!) and so little about all of those areas already under cultivation but whose production is being lost along the chain...

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Similar issues or ones related to those of water and soils exist with regard to forests, biodiversity and energy. In the case of energy, we mustn't forget that its contribution is essential for agricultural activity. Otherwise, food produced then transported thousands of kilometres would not be consumed, causing by extension a considerable waste of energy. Moreover, the production and distribution of crops are stages in which greenhouse gas emissions are not negligible. In the geopolitics of resources, one must thus consider the issue of their waste and poor use. Managing these resources better would mean contributing to rendering development more sustainable and responsible. It would also and above all mean increasing the means of attaining greater food security. The definition of the new Post-2015 Development Agenda and Sustainable Development Goals (SDGs) will probably reflect these growing concerns.

Reducing Food Waste

According to the UN Food and Agriculture Organization (FAO), approximately a third of world production is lost or wasted every year. This represents

nearly 1.3 billion tonnes of food intended for human consumption which goes to waste at all stages of the food system. These losses and waste are different and occur in different proportions according to the stage of the food chain and the geographic, social and economic context involved. Developing countries are more affected by food loss during agricultural production (harvesting, transport and storage of the foodstuffs produced), whereas higher-income regions are essentially concerned by food waste at the retail and consumption stages (in the home and at restaurants).

Due to demographic growth and socioeconomic change, the world food demand could increase from 40 to 70% by 2050. In this scenario, we will have to be capable of increasing world agricultural production by approximately 60%. This is an immense challenge calling for a plurality of responses, not only agronomic and technological, but also logistic, social and political. The reduction of food loss and waste constitutes a real means to improve the efficiency and sustainability of agriculture and food production systems that should be implemented on different territorial levels. Indeed, problems vary greatly between countries and sectors. There will always be a certain amount of fruit and vegetables that spoil during the transport stage, for they are fragile. However, it is more difficult to accept such losses for wheat, which is easier to handle. In Egypt, some 10 to 20% of the harvest is lost due to lack of efficient storage space and appropriate infrastructure. This country is the world's leading wheat importer. Reducing domestic losses would allow it to stem the rise in imports and adapt its local offer to domestic needs. In European societies, the struggle against food waste has become a highly significant matter of public and citizen action over the past few years. In France, Spain, Italy, Portugal and Greece, populations are realising that greater attention in this regard provides not only a means of reducing personal expenses but also an indirect contribution to the health of the planet. There are new reflexes being created, above all in times of economic crisis, that can contribute to building greater food security as they spread. Distribution is likewise working to change its rules on unsold items and sell-by dates for products on the shelf, distinguishing more clearly between the expiration date and the best-before date on labels. This increased

awareness of the general public and operators in the agro-food chain thus constitutes a significant collective grassroots movement.

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Whereas an increase in agricultural production is a goal in and of itself, there is no doubt that a drastic reduction of food waste, both after harvesting and in the consumption stage, certainly represents a more operational and sustainable enabler of world development. This represents, moreover, an essential line of action for farmers. Post-harvest losses automatically mean a loss of income for them, since quantities sold diminish. This dimension has long been neglected. Its rise on the international agenda and the strategies implemented by many states and local governments are gratifying. At the Ministerial Conference on Agriculture held on 8 May 2015 in Istanbul, the G20 reiterated the great importance of this matter in its communiqué. The Turkish authorities naturally spearheaded the issue with the experience gained through their current project to reduce bread waste in the country, whose early results are highly encouraging.

Feeding Knowledge

In addition to waste of natural resources and food, there is also a waste of savoir-faire and knowledge. The intergenerational transmission of good farming practices adapted to the geographic milieu proves as strategic in the 21st century as it was in the past. Yet this transmission cannot only be 'vertical.' It should be shared on a territorial level, in a country or region. In the Mediterranean, the challenges in agriculture are such that good practices must be fostered, experiences exchanged, and different techniques made known. Savoir-faire is effective over time if it is transmitted to new generations, but will be even more precious if shared collectively. In the

face of climate change, each solution counts and can offer action tips for people at the other end of the Mediterranean Region, for farmers open to the practices of others and agro-ecological progress. The accumulation of research without its being shared, the duplication of ideas without coordination or the lack of synergy among actors are other facets of the same problem, i.e. the waste of knowledge. Scientific diplomacy was never as necessary as it is today in the field of agronomic research. To feed the planet, people must be fed ideas and knowledge. Training is thus a crucial point to consider throughout a professional agricultural career. If we wish to establish sustainable food security, we must also combat this type of waste! In agriculture, this is of the essence. Traditional savoir-faire deserves greater attention and local solutions call for greater regional dissemination, which modern communication technologies amply allow. Hence, we must feed knowledge by sharing ever more experiences, knowledge and ideas. The circular economy of knowledge has incredible strength.

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Beyond the struggle against the waste of knowledge, it is human action that should be put in perspective. People come up with responses when faced with problems that crop up, thereby accumulating knowledge that sediments over time and spreads. Humans are the creators of solutions that can surmount underdevelopment. This positive reading of human action on the state of the planet is resolutely oriented towards human ingenuity, capable of inverting trends, creating and finding local solutions adapted to meeting global challenges. This assertion is a plea for a Post-2015 Sustainable Development Agenda that

could be structured according to four pillars: economic, environmental and social, naturally, but also innovation. By innovation, two things can be understood: first of all, humanity's capacity to create change, advance science, feed knowledge and bring about the sort of historic ruptures that sometimes make humanity take a giant leap forward; and secondly, the implementation of SDGs on the local level that take into account societies' cultural, social, economic and geographic specificities. Innovation for development is perforce local and distinctive. There is no magic recipe. Solutions will be adaptations to the situations in different territories to effectively implement knowledge in combination with the practices, needs and constraints of the context in which an action is intended to be translated into tangible results for people. Each territory can then invent its own model (or models!), at its own pace, with its own actors, difficulties and history.

Conclusion

The issue of waste and its different forms, schematically presented here, constitutes a significant challenge for the Mediterranean Region. In order to improve food security for people in the region, better managing natural resources, reducing agricultural loss and adapting knowledge to primary needs are strategic levers for concrete, pragmatic action. This is why CIHEAM is currently working with FAO to jointly conduct a cross-cutting analysis of this waste that will be the focal point of the 2016 edition of the Mediterra Regional Report. In any case, we are convinced that we must go further in this direction by working together with all Euro-Mediterranean multilateral cooperation actors wishing to commit to a Post-2015 Development Agenda whose implementation in the region rests largely on agriculture and food.

FEEDING KNOWLEDGE, A CONCRETE CIHEAM PROGRAMME

In the struggle against the waste of knowledge, CIHEAM's most emblematic contribution is the development and implementation of the Feeding Knowledge project, in collaboration with Milan Polytechnic, a project that fosters the transfer and sharing of knowledge and innovation in the Mediterranean Region. This initiative has been part of the preparations for the Milan Universal Exposition, to be held from May to October 2015. Making the Mediterranean Basin a laboratory of this innovative concept, Feeding Knowledge is a programme aiming to promote cooperation in research and innovation for food security through knowledge sharing and the joint creation of concrete solutions that could meet the needs of developing countries. Since 2012, the programme has established a Mediterranean network of over 2000 experts focussing on research, innovation and knowledge transfer for food security. The programme's five thematic spheres are sustainable management of natural resources, quantitative and qualitative enhancement of crops, socioeconomic dynamics and global markets, the sustainable development of small rural communities in marginal areas, and food consumption habits (food, environment, society, economy and health). Feeding Knowledge is expected to become one of the legacies of the Milan Universal Exposition and to be deployed more widely in the years to come.