

Eco-farming addresses hunger, poverty & climate change

Agriculture must be redirected to environmentally sound, socially just production methods to address the food and energy crises, hunger, poverty and climate change, reports **OLIVIER DE SCHUTTER**, Special Rapporteur to the UN on the right to food. Agroecology, which mimics natural processes, has had remarkable successes in the past decade, improving incomes and livelihoods for many millions of the world's poorest, small-scale farmers and has improved the resilience of food systems. Supporting small-scale farmers to make the transition to agroecology worldwide is vital to avoid more food and climate disasters in the 21st century. This article is abridged from the report, *Agroecology and the right to food*.

Small-scale farmers can double food production within 10 years using ecological methods, a UN report shows. In a comprehensive review of recent scientific literature,¹⁻⁴ the study calls for a fundamental shift to agroecology to boost food production and improve millions of the poorest people's livelihoods. *'Industrial farming on large plantations will not solve hunger or stop climate change. The solution lies in supporting small-scale farmers' knowledge and in raising their incomes so as to contribute to rural development. To feed 9 billion people in 2050, we urgently need to adopt the most efficient farming techniques available,'* says Olivier De Schutter, UN Special Rapporteur on the right to food and author of the report presented to the Human Rights Council of the UN in January 2011.

The report shows that agroecological methods outperform chemical fertilizers, boosting food production in difficult environments. Hunger today is caused by poverty rather than lack of global food supplies. After the food price crisis of 2008 it's necessary to reorient agriculture to highly productive methods that preserve ecosystems and invest in those who need it most, poor, small-scale farmers. Higher incomes for smallholders increase demand for goods and services from local traders, whereas large estates spend more on imported inputs and machinery.⁵ Support for small producers, breaks the vicious cycle of rural poverty and expanded urban slums where poverty breeds poverty.

It is widely cited that agricultural production must increase by 70% by 2050 if present consumption patterns persist. Already nearly half the world's cereal production is used for animal feed, and meat consumption is predicted to increase from 37.4 kg/person/year in 2000 to over 52 kg/person/year by 2050. The United Nations Environmental Programme (UNEP) estimates that the calories lost by using cereals for meat production instead of directly for human food could meet the annual calorie needs of more than 3.5 billion people.⁶ Reallocating cereals to human consumption, is desirable in developed countries where excess animal

protein consumption contributes to ill health. Agrofuel production also diverts crops from food needs to energy needs, bringing more pressure on agricultural supplies. Policies to reduce these diversions could greatly contribute to meeting the growing need for food.

Climate change with more frequent and extreme drought and floods and less predictable rainfall is already affecting the capacity of some communities to feed themselves, and is destabilising markets.⁷ Agricultural production is threat-

'Industrial farming on large plantations will not solve hunger or stop climate change. The solution lies in supporting small-scale farmers' knowledge and raising their incomes so as to contribute to rural development' – Olivier de Schutter



Eco-farming can feed Africa and the world.
NOURISHING THE PLANET

ened in entire regions, particularly those dependent on rain-fed agriculture.⁸ By 2080, 600 million additional people could be at risk of hunger, as a direct result of climate change.⁹ In Sub-Saharan Africa, arid and semi-arid areas are projected to increase by 60 million to 90 million hectares, and in Southern Africa, it's estimated that yields from rain-fed agriculture could be halved between 2000 and 2020.¹⁰

Agroecology applies ecological science to agricultural systems, mimicking natural processes. It enhances soil productivity, diversifies crops, and protects crops against pests, using natural methods, beneficial trees, plants, animals and insects. It increases farm productivity and food security, improves incomes and rural livelihoods, and reverses the trend towards species loss and genetic erosion.

Agroecology raises yields

A wide range of agroecological techniques have been developed and proven in various regions.¹¹ *Integrated nutrient management* fixes nutrients from inorganic and organic sources within the farm system and reduces nutrient loss by controlling erosion. *Agroforestry* incorporates multifunctional trees in agricultural systems. Large-scale agroforestry projects have successfully rehabilitated land in several countries including Tanzania, Malawi, Mozambique and Zambia.^{12,13}

Water harvesting in dryland areas allows abandoned and degraded lands to be cultivated. In West Africa, stone barriers built beside fields reduce runoff during the rainy season, improving soil moisture, replenishing water tables, and reducing soil erosion. The water retention capacity is multiplied five to ten-fold and biomass production 10 to 15 times. Livestock can feed on the grass that grows along the stone barriers after the rains.¹⁴

Integration of livestock into farming systems provides a protein source for the family and nutrients are returned to the soil by dairy cattle, pigs and poultry and by fish or shrimps raised in irrigated rice fields or ponds.

Such resource-conserving, low-external-input techniques have significantly improved yields. A systematic study of these techniques used in 286 recent sustainable agriculture projects in 57 poor countries on

A systematic study of these techniques used in 286 recent sustainable agriculture projects in 57 poor countries on 37 million hectares, found average crop yield increases of 79%

37 million hectares, found average crop yield increases of 79% and improved supply of critical environmental services.¹⁵ Reanalysis of the same data by UNEP and UNCTAD found that in Africa the increase was even higher than this global average; a 116% increase for all African projects and a 128% increase for projects in East Africa.¹⁶

Research commissioned by the UK's Foresight Global Food and Farming Futures project came to the same conclusions. It reviewed 40 projects in 20 African countries where sustainable intensification was developed during the 2000s. They included crop improvement, particularly breeding of neglected plants and cultivars,¹⁷ integrated pest management, soil conservation and agro-forestry. By early 2010, these projects had improved around 12.75 million hectares of land with documented benefits for 10.39 million farmers and their families. Average crop yields more than doubled over a period of 3-10 years, bringing an increase in food production equivalent to 557 kg per farming household.¹⁸

Even seemingly minor innovations can bring high returns. In Kenya, researchers and farmers developed the 'push-pull' strategy to control weeds and insect pests. This 'pushes' pests away by inter-planting the corn crop with insect-repellent plants like *Desmodium*, while 'pulling' them towards small plots of Napier grass, a plant that excretes a sticky gum which both attracts and traps pests. The system has other benefits: *Desmodium* can be used as fodder. The strategy doubles maize yields and milk production while improving the soil and has been widely adopted in East Africa, taught through town meetings, national radio broadcasts and farmer field schools.¹⁹ In Japan, farmers found that ducks and fish were as effective as pesticides in controlling insects in rice paddies, also providing additional protein for their families. The ducks eat weeds, weed seeds, insects, and other pests, reducing hand-weeding labour, while duck droppings provide plant nutrients. The system has been adopted in China, India, the Philippines and in Bangladesh where the International Rice Research Institute reports 20% higher yields and 60% increase in net incomes.²⁰

Reduces rural poverty

Agroecology helps increase incomes in rural areas by promoting on-farm fertility generation, which reduces farmers' reliance on external inputs and state subsidies, making vulnerable smallholders less dependent on moneylenders. Livestock manure and growing green manures can supply nutrients to the soil and farmers can also establish a 'fertilizer factory in the fields,' planting trees that take nitrogen out of the air to 'fix' it in their leaves which later fertilise the soil. *Faidherbia albida*, a nitrogen-fixing acacia species indigenous to Africa and widespread over the continent, sheds its foliage during the early rainy season when field crops are being established, so does not compete much for light, nutrients or water in the growing season. It markedly increases maize yields especially in conditions of low soil fertility and avoids dependence on synthetic fertilizers, their costs being increasingly high in recent years. In Zambia, unfertilised maize yields near *Faidherbia* trees averaged 4.1 t/ha, compared to 1.3t/ha just beyond the

canopy. Comparable techniques, like use of leguminous cover-crops to fix nitrogen also have huge potential,²¹ particularly for the poorest farmers, least able to afford fertilizers. Costs of importing and distributing fertilizers are the main reason for very low fertilizer use in low-income sub-Saharan African countries.

Following the dramatic food crisis due to drought in 2004-2005, Malawi launched a fertilizer subsidy programme in 2005-2006 but is now introducing agroforestry and nitrogen-fixing trees to prepare for the time when fertilizer subsidies will be scaled back or withdrawn.¹³ By mid-2009, over 120,000 Malawian farmers had received training and tree materials from the programme, and support from Ireland has now enabled extension to 40% of the country benefiting 1.3 million of the poorest people. Agroforestry has been able to increase maize yields from 1 t/ha to 2-3 t/ha, even if farmers cannot afford commercial nitrogen fertilizers and to more than 4t/ha with a quarter-dose of mineral fertilizer. This offers a strategy to exit synthetic fertilizer subsidy schemes, linking subsidies directly to agroforestry investments on the farm, thus improving the efficiency of fertilizer use, providing long-term sustainability in nutrient supply and building soil health to sustain crop yields.²² Malawi is exploring this 'subsidy to sustainability' approach.¹³

Agroecological approaches can be labour-intensive initially due to the complexity of managing different plants and animals on the farm, and recycling the waste produced.²³ Yet creating employment may be an advantage in rural areas of developing countries, where under-employment and population growth is high. It would slow urbanisation which is overloading public services in these countries, contribute to rural development and preserve the ability of following generations to meet their needs. The cost of creating jobs in agriculture is often significantly lower than in other sectors.²⁴ Peasant organizations report agroecology is also more attractive to farmers working the land for long hours, with shade from trees and absence of smell and toxic chemicals.²⁵

In Burkina Faso, instead of migrating, work groups of young men specialised in land rehabilitation techniques, go from village to village to help farmers improve the land. Farmers are now buying degraded land to improve and paying labourers to build structures such as 'zai pits' that can retain water and transform yields.²⁶ Over 3 million hectares of land in Burkina Faso are now rehabilitated and productive.

Agroecological approaches are compatible with gradual mechanization of farming. Machinery required for techniques such as no-till and direct seeding, bring more jobs, particularly in Africa which increasingly manufactures simple equipment.²⁷ Employment can also come from agroforestry expansion when tree nurseries are run as a business. Funded by the World Agrofor-

estry Centre, the Malawi Agroforestry Food Security Programme set up 17 nurseries that raised 2,180,000 seedlings in its first year.²⁸

Improves nutrition

The Green Revolution focused primarily on boosting cereal crops. While over 80,000 plant species are available to humans, rice, wheat and maize now supply the bulk of our food needs but they are mainly carbohydrate sources, with relatively little protein, and few other nutrients essential for adequate diets. The shift from diversified cropping systems to simplified cereal-based systems has contributed to micronutrient malnutrition in many developing countries.^{29, 30}

Nutritionists increasingly insist on the need for more diverse agricultural production to ensure a more diversified nutrient supply.³¹

The diversity of species on farms following agroecological principles, and in urban or peri-urban agriculture, is an important source of vitamins and other micronutrients. Indigenous fruits contribute around 40% of the natural food-basket that rural households rely on in southern Africa.³²

Mitigates climate change

Agroecology improves resilience to climate change, and more extreme weather events.³³ After Hurricane Mitch in 1998, a study of 180 communities of smallholders in Nicaragua demonstrated that farming plots cropped

On-farm experiments in Ethiopia, India, and the Netherlands have demonstrated that soils on organic farms improve the drought resistance of crops

African farmers can greatly increase yields by planting *Faidherbia*, an acacia tree, near their crops.



with simple agroecological methods - rock bunds and terracing, green manure, crop rotation, mulch, legumes, trees, plowing parallel to the slope, no-till, live fences, and zero-tillage - had on average 40% more topsoil, higher field moisture, less erosion and lower economic losses than conventional farms. On average, agroecological plots lost 18% less arable land to landslides and had 69% less gully erosion than conventional farms.³⁴

More frequent and severe droughts can be expected in the future. The agroforestry programme developed in Malawi has protected farmers from crop failure after droughts.³⁵ On-farm experiments in Ethiopia, India, and the Netherlands have demonstrated that soils on

organic farms improve the drought resistance of crops.³⁶ Diversity of species and farm activities involved in agroecology also helps mitigate risks from new pests, weeds and diseases. The agroecological practice of cultivar mixture bets on genetic diversity in fields to improve disease resistance. In Yunnan Province in China, after disease-susceptible rice varieties were planted mixed with resistant varieties, yields improved by 89% and rice blast disease was 94% less

severe than when they were grown in monocultures.³⁷ Agroecology puts agriculture on the sustainable path, freeing food production from reliance on fossil energy. It mitigates climate change by increasing carbon sinks of soil organic matter and above-ground biomass, and avoids carbon dioxide emissions by reducing direct and indirect energy use on farms. The Intergovernmental Panel on Climate Change (IPCC) has estimated the global mitigation potential for agriculture at 5.5 to 6 Gt of CO₂-equivalent yearly by 2030.³⁸ Most of this (89%), is from increased carbon sequestration in soil organic matter (humus), as occurs with agroecology.³⁸

Disseminating practices

Agroecology is knowledge-intensive, requiring development of both ecological literacy and decision-making skills in farmer communities. Modern science combines with local knowledge in agroecological research. Farmer participation is crucial for agroecological practices to succeed. So far agroecology has been developed by grassroots organizations and NGOs, and has spread through farmer field schools and farmers' movements, such as the Campesino a Campesino movement in Central America.³⁹ Experience with agroecological techniques is growing every day in peasant networks such as La Via Campesina and the AgriCultures Network, Réseau des Organisations Paysannes et des Producteurs Agricoles de l'Afrique de l'Ouest (ROPPA), Eastern & Southern Africa Farmers' Forum (ESAFF), and PELUM

(Participatory Ecological Land Use Management) network in Africa, MASIPAG network in the Philippines (Magsasaka at Siyentista Tungo sa Pag-unladng Agrikultura), or Assessoria e Serviços a Projetos em Agricultura Alternativa (AS-PTA) and Movimento dos Trabalhadores Sem Terra (MST) in Brazil.⁴⁰ These organisations are already functioning as learning organizations and must now be supported with investments in this role to disseminate their knowledge widely.

Participation empowers the poor, a vital step in poverty alleviation. Specific schemes for women can balance the greater access men have to formal agricultural knowledge.⁴¹ Co-operatives can help achieve economies of scale, and connecting sustainable farms to fair markets is important. But agroecology will fail to achieve the desired results unless markets are managed to protect farmers from volatile prices and local markets from the dumping of subsidised products.⁴² Fiscal incentives, market structures and credit and land tenure policies must be aligned with the need to move to agroecological methods.

Investing maximum available resources in sustainable agriculture is essential for future food security and to achieve responsibilities taken on by States on the right to food. Investments in agroecological research should be prioritized, because of the considerable potential of such practices. States need long-term policies to adopt agroecological practices and should refer to agroecology and sustainable agriculture in national strategies to realise the right to food and national plans to mitigate climate change. Public spending in agriculture needs to be redirected from private goods to providing public goods such as extension services, rural infrastructure and research on agroecological methods. It's urgent to facilitate the transition to agroecology, a low-carbon, resource preserving, resilient agriculture that can combat hunger, malnutrition and climate change and benefit many millions of the world's poorest farmers.

Dr Olivier De Schutter was appointed the Special Rapporteur on the right to food in May 2008 by the United Nations Human Rights Council. He is independent from any government or organization. The above article was abridged for *Pacific Ecologist* (KW) from the report *Agro-ecology and the right to food*, by Olivier De Schutter. The report is available in full at: <http://www2.ohchr.org/english/issues/food/annual.htm> For more information on the mandate and work of the Special Rapporteur, visit: <http://www2.ohchr.org/english/issues/food/index.htm> or www.srfood.org

REFERENCES

- 1 M.A. Altieri, *Agroecology: The Science of Sustainable Agriculture*, 2nd ed., Boulder, Colorado, Westview Press, 1995; S. Gliessman, *Agroecology: the ecology of sustainable food systems*, Boca Raton, Florida, CRC Press, 2007.
- 2 International Assessment of Agricultural Knowledge, Science & Technology for Development (IAASTD), *Summary for Decision Makers of the Global Report*, approved by 58 governments in Johannesburg, April 2008, Key Finding 7; see A. Wezel et al., 'A quantitative & qualitative historical analysis of the scientific discipline of agroecology', *International Journal of Agricultural Sustainability*, 7:1, 2009, pp. 3-18, rising interest in agroecology in scientific literature.
- 3 Miguel A. Altieri & Clara I. Nicholis, *Agroecology & the Search for a Truly Sustainable Agriculture*, UNEP, Mexico, 2005.
- 4 Sustainable Agriculture and Rural Development (SARD) Policy Brief 11, 2007.

It's vital to facilitate the transition to agroecology, a low-carbon, resource preserving, resilient agriculture that can combat hunger and malnutrition and benefit many millions of the world's poorest farmers

- 5 Ulrich Hoffmann, 'Assuring food security in developing countries under climate change challenges: Key trade & development issues of a profound transformation of agriculture,' Discussion Paper No. 201, UNCTAD, November 2010, p. 15.
- 6 United Nations Environment Programme (UNEP), *The environmental food crisis: The environment's role in averting future food crises*, 2009, p. 27.
- 7 For a fuller review of the impacts of climate change on human rights, including the right to food, see A/HRC/10/61.
- 8 'Stern Review on the Economics of Climate Change,' Cambridge, UK, Cambridge Univ. Press, 2007, p. 67.
- 9 United Nations Development Programme (UNDP), *Human Development Report 2007/2008. Fighting climate change: Human solidarity in a divided world*, New York, 2007, p. 90.
- 10 Intergovernmental Panel on Climate Change (IPCC), 'Climate Change 2007: Impacts, Adaptation and Vulnerability.' Working Group II contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge, UK, Cambridge Univ. Press, chapter 9.
- 11 See Jules Pretty, 'Agricultural sustainability: concepts, principles and evidence,' *Philosophical Transactions of the Royal Society B*, 363(1491), 2008, pp. 447-465.
- 12 C. Pye-Smith 'A Rural Revival in Tanzania: How agroforestry is helping farmers to restore the woodlands in Shinyanga Region,' *Trees for Change* No. 7, Nairobi, World Agroforestry Centre (ICRAF), 2010, p. 15.
- 13 D.P. Garrity et al., 'Evergreen Agriculture: a robust approach to sustainable food security in Africa,' *Food Security* 2:3, 2010, p. 200; K. Linyunga et al., 'Accelerating agroforestry adoption: A case of Mozambique,' ICRAF Agroforestry Project, Paper presented at the IUFRO Congress, Rome, 12-15 July 2004.
- 14 . A.M. Diop, 'Management of Organic Inputs to Increase Food Production in Senegal,' in *Agroecological innovations. Increasing food production with participatory development*, N. Uphoff (ed.), London, Earthscan Publications, 2001, p. 252.
- 15 Jules Pretty et al., 'Resource-conserving agriculture increases yields in developing countries,' *Environmental Science and Technology*, 40:4, 2006, pp. 1114-1119. The 79% figure refers to 360 reliable yield comparisons from 198 projects. There was a wide spread in results, with 25% of projects reporting a 100% increase or more.
- 16 UNEP-UNCTAD Capacity Building Task Force on Trade, Environment and Development (CBTF), *Organic Agriculture and Food Security in Africa*, New York/Geneva, United Nations, 2008, p. 16.
- 17 Such as improvements on cassava, for which NaCRRI developed locally-developed resistant varieties in Uganda, or tef improvements in Ethiopia, where the Debre Zeit Agricultural Research Centre developed a new variety called Quncho.
- 18 J. Pretty et al., 'Sustainable intensification in African agriculture,' *International Journal of Agricultural Sustainability*, 9:1, 2011.
- 19 Z. Khan et al., 'Push-pull technology: conservation agriculture approach for integrated management of insect pests, weeds and soil health in Africa,' *International Journal of Agricultural Sustainability*, 9:1 2011.
- 20 'Integrated rice-duck: a new farming system for Bangladesh,' in *Innovations in Rural Extension: Case Studies from Bangladesh*, P. Van Mele et al. (eds.), Oxfordshire, UK/Cambridge, USA, CAB International, 2005.
- 21 Leguminous cover crops globally could fix enough nitrogen to replace the amount of synthetic fertilizer currently used: see C. Badgley et al., 'Organic agriculture and the global food supply,' *Renewable Agriculture and Food Systems*, 22, 2007 pp. 86-108.
- 22 O.C. Ajayi et al., 'Labour inputs and financial profitability of conventional & agroforestry-based soil fertility management practices in Zambia,' *Agrekon*, 48, 2009, pp. 246-292: research in Zambia does not support 'the popular notion that agroforestry practices are more labour intensive.' (p. 279).
- 23 O.C. Ajayi et al., 'Labour inputs & financial profitability of conventional & agroforestry-based soil fertility management practices in Zambia,' *Agrekon*, 48, 2009, pp. 246-292: '[...] agroecological methods of soil fertility management are compatible with mineral fertilisers, & combined use has synergistic yield effects,' (p. 288).
- 24 Miguel Carter (org.), *Combatendo a desigualdade social: O MST e a reforma agrária no Brasil*, São Paulo, Editora Unesp, Centre for Brazilian Studies, Universidade de Oxford, NEAD, MDA, 2010, p. 69.
- 25 P. Rosset et al. *Revolución agroecológica: El Movimiento de Campesino a Campesino de la ANAP en Cuba*, Havana, La Via Campesina and ANAP, 2010.
- 26 J. Pretty et al., 'Sustainable intensification in African agriculture,' *International Journal of Agricultural Sustainability*, 9:1, forthcoming in 2011.
- 27 In East Africa, this development was facilitated by technology exchange from Brazilian manufacturers to their counterparts in East Africa: see Brian Sims et al., 'Agroforestry and Conservation Agriculture: Complementary practices for sustainable development,' 2nd World Congress of Agroforestry, Nairobi, Kenya, 23-28 August 2009.
- 28 44 C. Pye-Smith, *Farming Trees, Banishing Hunger: How an agroforestry programme is helping smallholders in Malawi to grow more food and improve their livelihoods*, Nairobi, World Agroforestry Centre, 2008, p. 10.
- 29 M.W. Demment et al., 'Providing micronutrients through food based solutions: a key to human and national development,' *Journal of Nutrition*, 133, 2003, pp. 3879-3885.
- 30 E. Frison et al., 'Agricultural biodiversity, nutrition and health: making a difference to hunger and nutrition in the developing world,' *Food and Nutrition Bulletin*, 27:2, 2006, pp. 167-179.
- 31 See B.J. Alloway (ed.), *Micronutrient deficiencies in global crop production*, Springer Verlag, 2008, 354 pp.; and F.A.J. DeClerck et al., 'Ecological Approaches to Human Nutrition,' *Food and Nutrition Bulletin*, forthcoming in 2011.
- 32 B. Campbell et al. 'Local level valuation of Savannah resources: A case study from Zimbabwe,' *Economic Botany* 51, 1997, pp. 57-77.
- 33 'The use of agrobiodiversity by indigenous and traditional agricultural communities in adapting to climate change,' Synthesis paper, Bioversity International and The Christensen Fund, 2010.
- 34 Eric Holt-Giménez, 'Measuring Farmers' Agroecological Resistance After Hurricane Mitch in Nicaragua: A Case Study in Participatory, Sustainable Land Management Impact Monitoring,' *Agriculture, Ecosystems and the Environment* 93:1-2, 2002, pp. 87-105.
- 35 F.K. Akinnifesi et al., 'Fertiliser trees for sustainable food security in the maize-based production systems of East and Southern Africa. A review,' *Agronomy for Sustainable Development* 30:3, 2010, pp. 615-629.
- 36 F. Eyhord et al., 'The viability of cotton-based organic agriculture systems in India,' *International Journal of Agricultural Sustainability*, 5, 2007, pp. 25-38; S. Edwards, 'The impact of compost use on crop yields in Tigray, Ethiopia,' *FAO International Conference on Organic Agriculture and Food Security*, Rome, 2-4 May 2007.
- 37 Y.Y. Zhu, et al. 'Genetic diversity and disease control in rice,' *Nature* 406, 2000, pp. 718-722.
- 38 IPCC, *Climate Change 2007: Mitigation of Climate Change, Contribution of Working Group III to Fourth assessment Report*, 2007: section 8.4.3.
- 39 A. Degrande, et al., *Mechanisms for scaling up tree domestication: how grassroots organisations become agents of change*, ICRAF, 2006, p. 6; E. Holt-Giménez, *Campesino a campesino: voices from Latin America's farmer to farmer movement for sustainable agriculture*, Oakland, Food First Books, 2006; P. Rosset et al. *Revolución agroecológica: El Movimiento de Campesino a Campesino de la ANAP en Cuba*, Havana, La Via Campesina and ANAP, 2010.
- 40 E. Holt Gienenez 'Linking farmers' movements for advocacy & practice,' *Journal of Peasant Studies*, 37:1, 2010, pp. 203-236. 41. Sarah Jewitt, 'Unequal Knowledge in Jharkhand, India: De-Romanticizing Women's Agroecological Expertise,' *Development and Change* 31:5, 2000, pp. 961-985
- 42 HRC Dr De Schutter's report, 'Mission to the World Trade Organization,' A/HRC/10/5/Add.2, 4 February 2009: Add 2 paras 22-23.