THE GLOBAL CRISIS IN NUTRITION AND MENTAL ILL-HEALTH.

THE POPULATION CRISIS:

Global population was 1 billion in 1804. It took 123 years to reach 2 billion in 1927 and another 33 years to reach 3 billion in 1960s. By 2000 it reached 6 billion and it then took only 11 years to add another billion. Although increased wealth is usually associated with reduction in population growth, change will do little in the next 20 years. The population growth is exponential and the next 20 years is built on the previous accumulation of people. The already stretched food and fresh water resources presents a major global challenge. The arable land mass of the planet is reaching full occupation and there is not enough to meet the nutritional requirements, in an equitable manner for all.

The argument presented above is from a UK Think Tank Foresight on the *global* future *of food and agriculture*[1]. It involved 400 experts across the world, and 2 years of preparation.

Today, there are 925 million undernourished people in the world. That means 1 in 7 people do not get enough food to be healthy and lead an active life. Hunger and malnutrition are in fact the

Iodine deficiency: Goitre in Sudan
Photo – Izzeldin Hussein 2008.

number one risk to the health worldwide — greater than AIDS, malaria and tuberculosis combined (UNICEF). Some 2 billion are malnourished and or suffering from nutrient deficiencies especially iodine. Some 600,000 children died last year in Africa from malnutrition.

Little known milder malnutrition is present in the UK and affects over 3 million people with associated health costs exceeding £13 billion annually (BAPEN 2009).

Sir John Beddington the UK Government's Chief Scientist commenting on the Foresight report claimed that the challenge can only be met by intensification of agriculture and genetic modification.

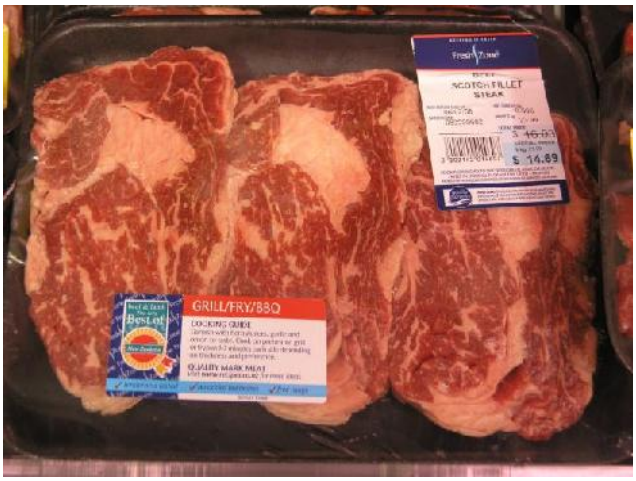
[1] http://webarchive.nationalarchives.gov.uk/+/http://www.bis.gov.uk/foresight/our-work/projects/current-projects/global-food-and-farming-futures/reports-and-publications

The modern rash of non-communicable diseases:

Intensification is however, one of the causes of the dent in the nutritional value of food which is likely to be related to the high and increasing incidence of non-communicable diseases. Heart disease for example, rose from a rarity in 1900 to no 1 killer in the 1960s. Breast and colon cancer were also rarities. Heart disease and the cancers were and still largely rare in East Africa, China, Japan and Korea.

Tragically, as these countries adopt the Western foods so these diseases are rising with colon cancer a concern of Professor Chen, Chair of the Expert Committee of the Chinese Food Safety Centre in Beijing.

The human genome separated from the great apes 5- 7 million years ago but still differs by only 1.5%. That means human physiology is adapted to wild foods. Intensification has changed food for example wild meat from lean to heavily fat infiltrated meat and 9 times the energy coming from the



Above: the lack of exercise in stalls and high energy Foods result in replacement of meat by fat which is in addition to the carcass fat ending in foods.

The bottles of fat each came from an intensively A waste of energy & adverse nutritionally.

carcass fat compared to protein. That fat is energy wasteful and is thromobogenic, atherogenic and obesigenic. With obesity as now of real concern in western countries, it is difficult to see further intensification as a solution. A radical re-appraisal of its methodology would welcomed both to conserve energy and to contribute to health.

Life began in the oceans, we need to protect the oceans to save ourselves (Korean Pavilion EXPO 2012)

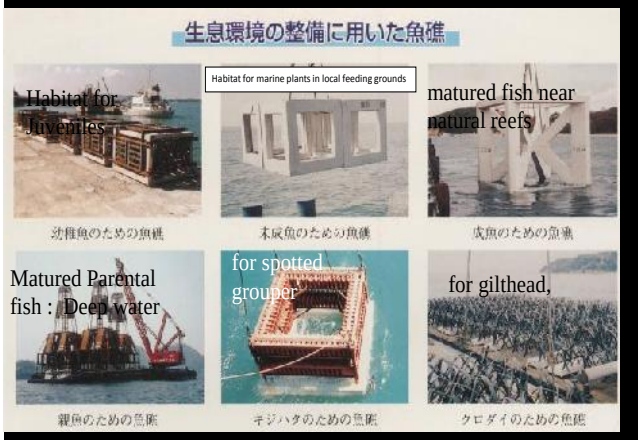
The answer for food lies in the oceans and the development of marine agriculture as being developed in China, Japan, Korea and Indonesia. Take the potential of the UK for example. The UK has approximately 18.3 M Hectares (2010 DEFRA) of arable land for animals and crops. The UK coastline is 19,128 miles. An area of 1 mile from the coast is equivalent to about 5 M Hectares. Just as some land is unusable for agriculture, some used for urbanization and some for leisure so not all of the coast line could be used for marine agriculture. However, a significant part could be extended into deeper waters with artificial reefs to enhance surface area and growth of sea plants life and animal life, doubling the potential for food production..

The marine potential needs to be explored urgently and a plan is being drawn up to develop marine agriculture in the Kent, the Medway and Thames estuaries.

Globally, 71% of the planet is covered in sea water. The present constraint on development of marine agriculture is pollution from human land based activities. In Singapore 80% of the marine pollution is coming from the land (Manila Declaration conference 2009). Most of the estuaries of the planet are polluted and no longer the beginning source of the marine food web. The reversal of pollution is a matter of urgent attention (Declarations of Muscat 2008 and Manila 2009);

Capture fisheries reached its limit 20 years ago. Aquaculture will also reach a limit where it depends on by products of the wild catch. There is only one solution: that is fresh water, coastal, estuarine and oceanic agriculture.

Artificial Reefs Yokohama, Japan



Sea Bed Kelp Farming –Bali, Indonesia

The rise in brain disorders and the supreme importance of maternal nutrition and health.

The protection of mental health has to be the first priority. Foresight's consideration of food security was basing its calculations on the protein needs. Protein is not the issue. The limiting factor for H. sapiens is DHA, iodine and co-existing trace elements. Trace elements have for many millennia been washed into the sea by rain and wind. The future has to be the development of the coasts and oceans for food which would be rich in both iodine and DHA. These are nutritional elements were involved with the evolution of the brain 500 million years ago and the requirement for brain growth, development and health today is still the same.

There is now ample evidence and 3 FAO-WHO joint international consultations (1978, 1994 and 2010) confirming this essentiality. Moreover the key is the fact that the brain develops before birth defining maternal health and nutrition as the extremely important factor in the way forward. The present focus of international and national aid organizations is on the needs of children. Important as that is, the health and future capability of the child depends on prenatal development and hence the mother. Seventy

percent of the adult number of brain cells divides early in pregnancy. Hence the supreme importance of the mother.

Last century, science and food policy focussed on protein and body growth.

H. Sapiens is about brain growth not body growth.

Note the similar sizes of the brain

Note the sizes of the hands.

The brain is the first priority on H. sapiens

Body = protein
Brain = lipids.
Priority is the brain specific lipid.

In 1972 there was enough evidence for us to predict that unless the food paradigm changed from protein and body growth to serve the fatty needs of the brain, then the brain would be next[2]. This prediction has been vindicated.

In 2005 the EU published an audit of the cost of ill health. Brain disorders were found to have overtaken all other burdens of ill health at a cost of €386 billion. A review in 2010 put the cost at €789 billion.

Dr Jo Nurse at the DoH presented the UK cost of mental ill-health in 2007 at £77 billion – a cost greater than heart disease and cancer combined. A reassessment in 2010 found the cost to be £105 billion.

The Global Forum for Health predicts mental ill-health will be no 2 in the list of burdens of ill health in less than 8 years' time which it will share with heart disease and adverse pregnancy outcomes. Although these have multiple factor causation, there can be little doubt from the historical, epidemiological, experimental and clinical trial evidence that the adverse nutritional conditions are a major cause. Moreover, targets set at the Millennium World Food Summit to halve global hunger by 2015 are already off target. The often reported overall 'decrease' in global hunger is largely on account of improvements in China which disguises a deteriorating situation in many other countries.

This situation presents the gravest threat to humanity.

[2] What We Eat Today by MA & SM Crawford, Neville Spearman 1972, London. Reviewed by Graham Rose in the Sunday Times 5the November 1972. "Unless something is done we will become a race of morons!".

CONCLUSION:

The top 3 global burdens of health in less than 8 years' time are predicted to be heart disease, adverse pregnancy outcomes and mental-ill health. They have common cause in ill-advised nutritional policies.

The supreme importance of the brain has been ignored in considerations of health and food policies. The consequence is the rise in brain disorders. This rise is especially amongst children and points to the mother. Maternal nutrition and health before and during pregnancy determines the growth and function of the brain which is largely determined before birth. The continued rise of brain disorders this century threatens the very essence of what makes us human.

Foresight in its report to Governments 2011 claims there is not enough new arable land to meet the basic needs of food for an equitable distribution across all 7 billion children and adults today never mind the 9 billion predicted in a few years' time.

The solution has to lie in agriculturalizing the oceans – marine agriculture.

The paradigm in nutrition pertinent to food and agriculture of the last century was protein. There was a tacit assumption the needs of the brain were the same as for body growth. This assumption was wrong.

There are different requirements for the brain and the body: the brain requires essential fats the richest resource for which is in fish and sea foods (the brain evolved in the sea 500 million years ago making use of these nutrients).

There is good evidence the rise in brain disorders is a consequence of the mistaken paradigm in nutrition and the change in food chemistry in recent time. In Europe and the US, brain disorders have now overtaken all other burdens of ill health. A continued rise has the most grave implications for social order, peace and humanity.

The solution to both the need for food and the challenge of rising mental ill-health lies not only in the development of marine agriculture but specifically in the health and nutrition of the mother. There is a need for a *world charter for mothers*.

"asking the question not only is the cup full but what is in the cup? We know now that if children under two do not receive sufficient nutrition they will be sentenced to a lifetime of mental and physical limitations." Josette Sheeron, CEO UN-World Food Programme report to the Board June 2010.

With the exception of UN-WFP health and development of the brain has been off the radar for most. Immediate action is needed to achieve an equitable food system that promotes good mental as well as physical health.

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Michael A Crawford October 2012

Imperial College, Reproductive Physiology, Chelsea and Westminster Hospital Campus, London SW10 9NH, UK
michael.crawford@imperial.ac.uk
For THE MOTHER AND CHILD FOUNDATION. A Registered Charity No. 1037513
www.mother-and-child.org