



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive



HSE Public Health Medicine Environment and Health Group

Submission on the Agriculture Sector – Climate Change Adaptation Plan and associated documents¹ relating to the Health Sector

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¹ <http://www.agriculture.gov.ie/ruralenvironment/climatechangebioenergybiodiversity/adaptation/>

Submission Summary

Please consider the health impacts of biological contamination of drinking and recreational water, air quality effects of wood burning and forest fires.

Also please consider what health effects climate change might bring to the population in this sector.

The plan and related documents are very informative and demonstrate the priorities for the agriculture sector. This aids the understanding of other sectors about agriculture issues. The Department of Agriculture, Food and Marine stakeholder consultation meeting on 24th of November 2016 was very encouraging, and provided a very positive opportunity for cross-sectoral issues to be discussed.

This submission documents the points raised at the meeting relating to the health sector, describing agriculture and forestry issues that may affect health into the future and makes a number of recommendations.

General points

The Agriculture and Forest Sector screening process mainly identifies risks to the agriculture sector, rather than identifying risks to other sectors from the agriculture sector. This is inevitable at present for all the sectors as this is the first round of planning, and this is the first sector to have a stakeholder consultation, and the cross-sectoral dependencies haven't yet been identified.

However, indirectly this has potential to miss important non-agriculture impacts for those within the agriculture sector. For example, where there are increased health risks related to the impact of climate change within the agriculture sector, these health risks may have a devastating personal impact on people working within the agriculture sector.

This first round of sectoral planning demonstrates that adaptation planning across all the sectors will need to be iterative, and assessment of cross-sectoral dependencies will need to be on-going.

This submission

It cannot be a definitive examination of even current cross-sectoral dependencies, as there is no evidence based tool to carry out such an examination but the following are the main issues that are immediately apparent for us.

Adaptation Plan for Agriculture and Forest Sector

The health sector is not identified as a sector that will have cross-sectoral implications even though it is one of the sectors identified as requiring an adaptation plan. It should be noted that "Health and Safety" as applied in these documents appears to be confined to occupational health. This is a very important area, but is still only a small subset of the cross-sectoral dependencies between the Agriculture and Health Sectors.

While the impact of pesticides and nutrient run-off on the quality of ground water has been considered, the impact of biological hazards on the public health on both drinking water and recreational surface water has not.

Health implications that need to be considered in the Adaptation Plan for Agriculture and Forest Sector include:

Drinking water quality in terms of biological hazards

- Health problem - Ireland consistently has the highest rate of Verotoxigenic E. coli (VTEC) in Europe – 12.42/100,000 in 2014² and generally increasing year by year. Although laboratory methods have increased the diagnosis of this illness, the rates of Haemolytic Uraemic Syndrome (HUS), the major complication of this infection, increased also, indicating a real increase of infection. Ireland also has the highest rates of *Cryptosporidium*³.
- How it relates to agriculture - The reservoirs of these serious pathogens include farm animals. When these pathogens are released into the environment in animal faeces, the environmental transport of these pathogens into drinking water (and also recreational water) can occur.
- Environmental factors - Heavy rainfall increases the transport of pathogens towards human exposure points such as drinking water supplies, beaches / recreational water.

In Ireland we are quite vulnerable to risk from contaminated drinking water from cross-sectoral issues. Because they are cross-sectoral they may not be addressed as a whole, therefore allowing the issues to continue. These include:

- We have a significant population exposed to unregulated untreated water supplies – up to 700,000 people
- The use of private wells is more common in rural areas, where the source of the pathogen is more likely to be present
- We often don't build wells to the appropriate standard in Ireland ([IGI guidelines](#)) – frequently there is no sanitary seal so wells don't exclude contaminated water
- EU regulations – which provide incentives for safety - place all the emphasis on nitrates and pesticides rather than on biological hazards
- There is no coordinated policy in relation to private water supplies – local authorities can give grants for wells that do not meet IGI guidelines, while local authorities have a duty to inform private well owners of the issues / risks they do not have a register of well-owners so awareness raising is quite incomplete, planning may not consider the safe sustainability of private drinking water and sanitation systems, risk assessments are relevant to several sectors but are not standardised or agreed across these sectors etc
- We understand the grant aiding of slurry/waste management on farms may exacerbate the volume of biohazard contamination through allowing the addition of rainwater
- Use of faecal indicator organisms for risk assessment – there is some doubt as to their efficacy in health protection⁴
- We have limited understanding of the source to receptor pathway – better knowledge is required to disrupt the pathway most efficiently and effectively

Cross-sectoral implications - Climate change is likely to increase precipitation events that are likely to increase risk of contamination of drinking water, especially wells, and with increased temperatures, pathogens are less likely to die off in the soils. The impact for health is increased risk of cases of zoonotic illness, outbreaks and increased mortality, especially in the young or immuno-suppressed.

Risks to both sectors include:

² <http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2015.4329/epdf>

³ <http://ecdc.europa.eu/en/publications/Publications/food-waterborne-diseases-annual-epidemiological-report-2014.pdf>

⁴ <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0093301&type=printable>

Apart from the health risks of contaminated water, the “ready to eat” suppliers may be vulnerable to increased or intermittent contamination, if the water supply treatment system is vulnerable to being overwhelmed.

Pesticide risk to surface water

We understand that there is an upward trend in pesticide exceedances in surface waters, from which the majority of the population get their water supplies. Increased precipitation with climate change is likely to increase contamination risk, so pesticide use/requirements into the future need to be managed safely.

The main barrier to progress is the cross sectoral responsibility which makes Irish Water responsible for the quality of water at the tap, but leaves the catchment protection and the implementation of EU Pesticide Sustainable Use Directive (SUD) outside their remit. A structure which brings these elements together will be needed as long term presence of pesticide may have the effect of incentivising the use of bottled water which will have other energy impacts – which therefore may be a maladaptation.

Recommendations:

Current risk assessment methods in relation to drinking water may need to be reviewed to ensure that they are co-ordinated and resilient to future risks such as the possibility that organism die-off assumptions may no longer be safe.

Formal coordination between agricultural, environmental and health sectors is required to assure the highest standards for zoonotic disease control.

Increased awareness of the possible contamination of drinking water and wells in particular from nearby grazing animals and preventive farming practices should be included in Knowledge Transfer Groups.

Consideration should be given to treatment of animal waste close to source, towards reduction of the biohazard burden and reduced contamination of the environment.

More research is needed on the environmental fate of pathogenic organisms as environmental conditions change

Cross-sectoral responsibility for all aspects of water management needs to be clear and effective to provide comprehensive safety in use of water for drinking and recreation

Air quality

- The health problem – Ireland has some of the highest rates of asthma and cystic fibrosis in the world, and high rates of other respiratory conditions. While everyone needs good air quality, people with underlying respiratory disease are more vulnerable to health impacts when air quality deteriorates. People with other diseases such as heart conditions may also be more vulnerable.
- How it relates to agriculture – Increased forestry is recognised both as positive climate change mitigation and adaptation responses. However, there are possible negative health impacts of roundwood harvest, through the increased use for wood burning. An increase in the number and extent of forest fires would also have considerable negative health impacts.
- Environmental effects – forestry can contribute to cleaner air and this is welcomed, especially if there are additional recreational and physical health activity opportunities. However, wood burning and forest fires may affect air quality especially through increased emissions of particulate matter including PM2.5, nitrous oxides, carbon dioxide

and carbon monoxide. These air pollutants have been linked to cancer, asthma, stroke and heart disease, diabetes, obesity, and changes linked to dementia⁵.

Cross-sectoral implications – if air quality is diminished, there is likely to be a significant increase in morbidity and mortality, reversing the significant benefits achieved such as policies such as the banning of smoky coal and reducing emissions in the transport sector.

Recommendation

Current and future roundwood forestry and wood burning policy should ensure that the safest methodology in terms of minimising emissions to air is being implemented. Forest fire controls should be maximized.

Both water quality and air quality are also important for Ireland's clean green image for exports and tourism. It should be noted that the health sector values economic activity as this is also necessary for health and so the health sector. Rural economic activity is important to reduce rural poverty and health inequalities.

Other cross-sectoral impacts may include:

Agriculture as a stakeholder of the health sector

Agriculture needs healthy workers so collaboration between the agricultural sector and the health sector on advocacy, prevention and management of health needs may be helpful.

Health needs might include:

Physical and Mental health of those working in the agricultural sector

It is clear that those working in the agriculture sector take much of the risk for the sector and are already subjected to uncertainties of weather and flooding, markets, national and international food policy etc so they need to be physically and mentally resilient. Climate change may bring opportunities but may also bring climate shocks and overwhelming stresses to those working in this sector. For example, flooding would provide additional risks to homes, land and livelihood.

While there was understandable emphasis in the level of resilience already in the farming sector at the Workshop on Adaptation to Climate Change in the Agriculture and Forest Sector in November 2016, however evidence suggests that the resilience is not so robust, but there may not be strong awareness of this, as health effects may be less obvious or even hidden e.g. because of stigma.

Some health problems, such as for cardiovascular diseases, stress and other mental health problems, are fairly common among farmers. Smyth et al (2012)⁶ report that "farmers and agricultural workers experienced the highest levels of mortality for all causes of death (2000-06). Farmers are 5.14 times more likely and agricultural workers are 7.35 times more likely to die from any cause of death than the lowest risk group. Circulatory disease is a significant cause of mortality among farmers".

⁵ Royal College of Physicians Working Party, 2016. *Every breath we take: the lifelong impact of air pollution*, London. Available at: www.rcplondon.ac.uk.

⁶ <https://www.ncbi.nlm.nih.gov/pubmed/22436692>

The Irish Heart Foundation 2013-2014 study⁷ found that 64% of farmers reported experiencing stress sometimes and of these 16% reported feeling stressed most of the time. A 2012 Irish study⁸ found that of farmers surveyed 38% had some experience of mental health problems but 42% said they would hide a diagnosis of mental health problems and 27% would delay seeking help for fear of others finding out about their mental health problem. In addition, a 2012 study by the CDC in the US⁹ found that among all occupational groups, those working in the farming, fishing, and forestry group had the highest rate of suicide overall (84.5 per 100,000 population) and among males the rate was 90.5/100,000.

These indicators of stress for farmers should be kept in mind in the development of the climate change adaptation planning process. Indicators on the health and wellbeing of farmers and other agricultural workers may well be an important resilience measure of climate change adaptation in the agriculture sector.

- *Migrant health*

Agricultural workers who are also migrants may have additional or different health needs

Health and safety

The death rate in farmers from injuries and poisonings is 3.5 that of the rest of the population⁶. Climate change may exacerbate some of these risks. Some aspects are particularly amenable to improvement by the health sector such as infection control information / advice.

Other areas of common interest

Land-use planning may affect agriculture by using high quality agricultural land for urban development, which then may threaten agricultural productivity. Sustainable food policy and agricultural economic activity is important for health of the whole population.

Land-use planning may affect flooding risk, which impacts on farming and also provides many risks to human health.

General Recommendation

As for all policy developments in all sectors, health impact assessment should be considered.

⁷ <http://www.ifa.ie/wp-content/uploads/2015/08/Farmers-Have-Hearts-Irish-Heart-Foundation-2013-14.pdf>

⁸ Public attitudes towards mental illness, a benchmark study for See Change:

http://www.seechange.ie/wp-content/themes/seechange/images/stories/pdf/Farmers_and_Rural_Community.pdf

⁹ McIntosh WL, Spies E, Stone DM, Lokey CN, Trudeau AT, Bartholow B. Suicide Rates by Occupational Group — 17 States, 2012. MMWR Morb Mortal Wkly Rep 2016;65:641–645.

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