HAPPY PLANET

THE GREEN REPORT

by Toward Zero Carbon

The Toward Zero Carbon team has over 20 years' experience in the energy management business.

Throughout our time in the industry we have worked with a diverse range of client including members of the Food and Drink, Manufacturing and Public Sectors.

We recognise that security of energy supply, carbon reduction and cost minimisation rank highly among the challenges facing all participants in Irish industry.

Through our hands-on experience we have recognised a number of barriers to the successful implementation of energy conservation measures (ECM). Perhaps the most significant of these barriers is the intense competition for capital expenditure.

Securing capital expenditure for the implementation of ECM's is challenging due to a combination of possible factors including current low energy prices, short run hours of machinery, demand for capital in other areas of the organisation all culminating in unattractive returns on investment.

Our suite of services offers our clients innovative, sustainable and practical solutions to the challenges faced by organisations competing in today's environment

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Green Report supported by the Local Enterprise Office, South Dublin

Project Background/Description

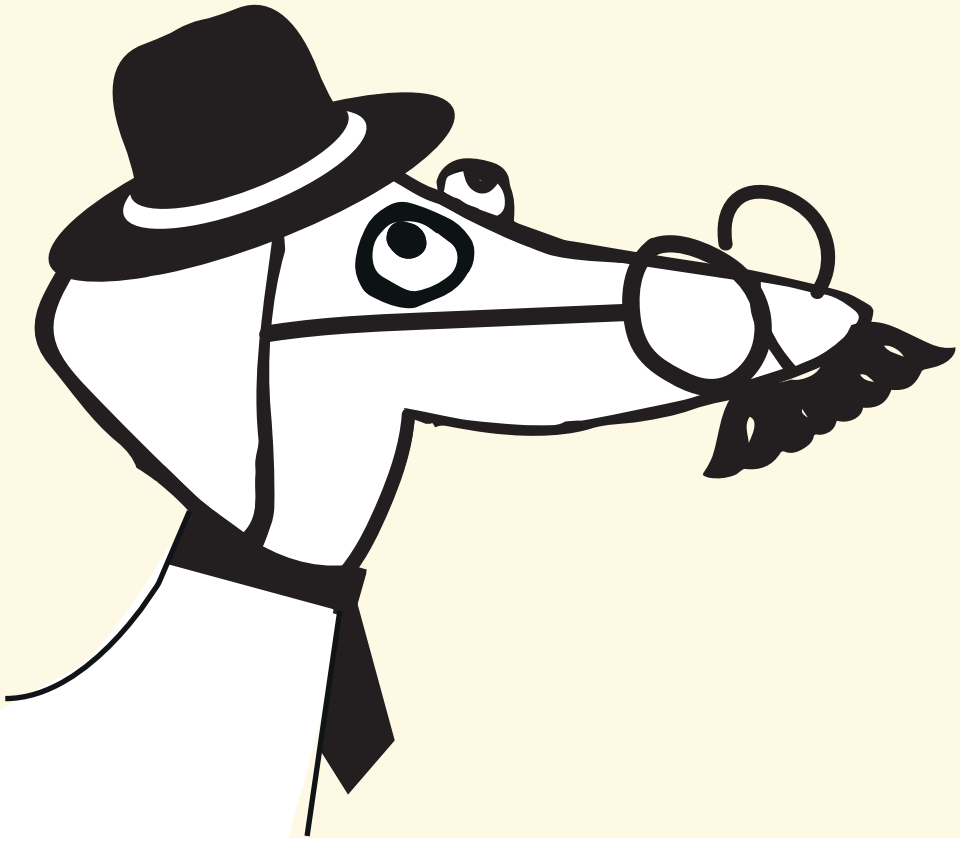
Thanks plants manufactures plant-based alternatives to meats. The objective of the assignment is to assess and evaluate plant-based products against traditional meat-based products from an environmental perspective. The project outputs will include metrics comparing the two alternatives using easily communicated equivalents. Outputs to be used by the organisation in creating awareness surrounding the environmental benefits associated with the product. Research will be conducted using secondary data sources.

Project Objectives:

1. Create comparables that are Irish-centric
   (e.g., reducing meat is equivalent to taking x no of cars off the road in Dublin)

2. Investigate new data that hasn't been explored, e.g., soybeans imported from Brazil/Argentina to Ireland as animal feed.

3. Making sure the comparables that are understandable to the Irish consumer



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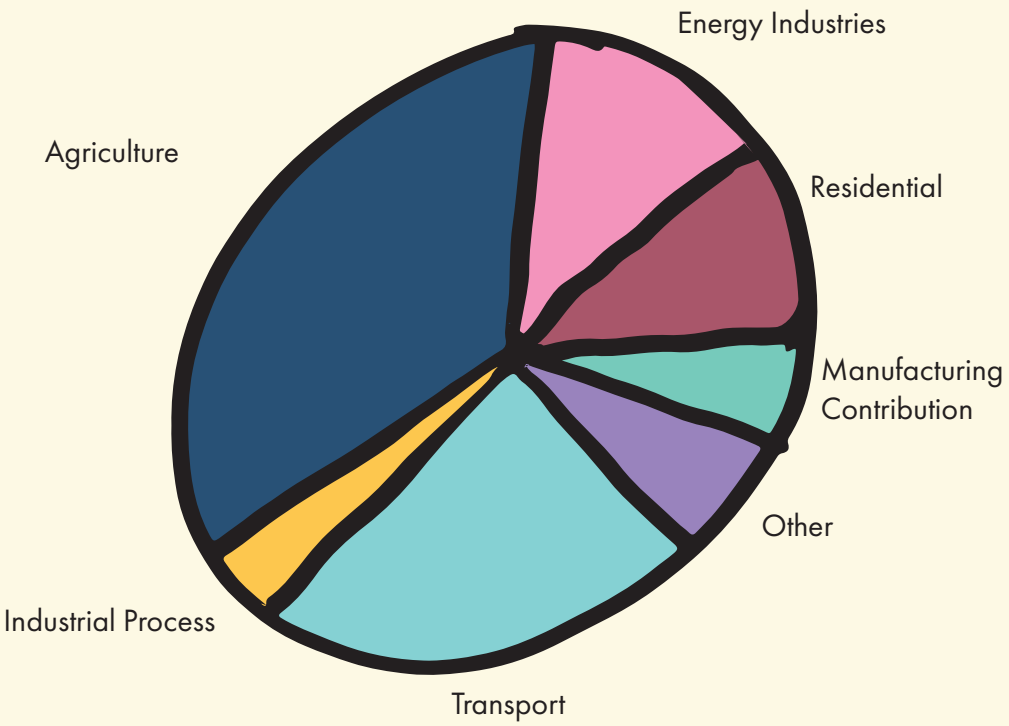
THE GREEN REPORT

Ireland is the third largest greenhouse gas emitter per capita in Europe, behind only Luxembourg and Iceland. The foods that we eat have a massive impact on our environmental foot print. The Food and Agriculture Organisation of the United Nations report that food systems account for more than one third of the global greenhouse gas emissions, with the production of animal products for consumption domestically and internationally making significant contributions to our national emissions. According to the Environmental Protection Agency (EPA), agriculture in Ireland was the source of 35% of the nation's total greenhouse gas emissions in 2019. Animal based products contribute the lions share (68%) of agriculture's emissions, with the majority of emissions being produced by the digestive system of animals. Greenhouse gasses emitted by animals through their digestive system and manure include Methane (CH4) and Nitrous Oxide (N2O). Nitrous Oxide has a global warming potential approximately 300 times greater than Carbon Dioxide (CO2) and remains in the atmosphere for up to 120 years. Reducing our agricultural emissions is essential to reducing our impact on the earth.

GREEN HOUSE GAS EMISSIONS 2019 (KTC02EQ)



Source 1 Environmental Protection Agency

Note: 1 "Other' Includes Commercial Services, Public Services, Waste amd HFC's

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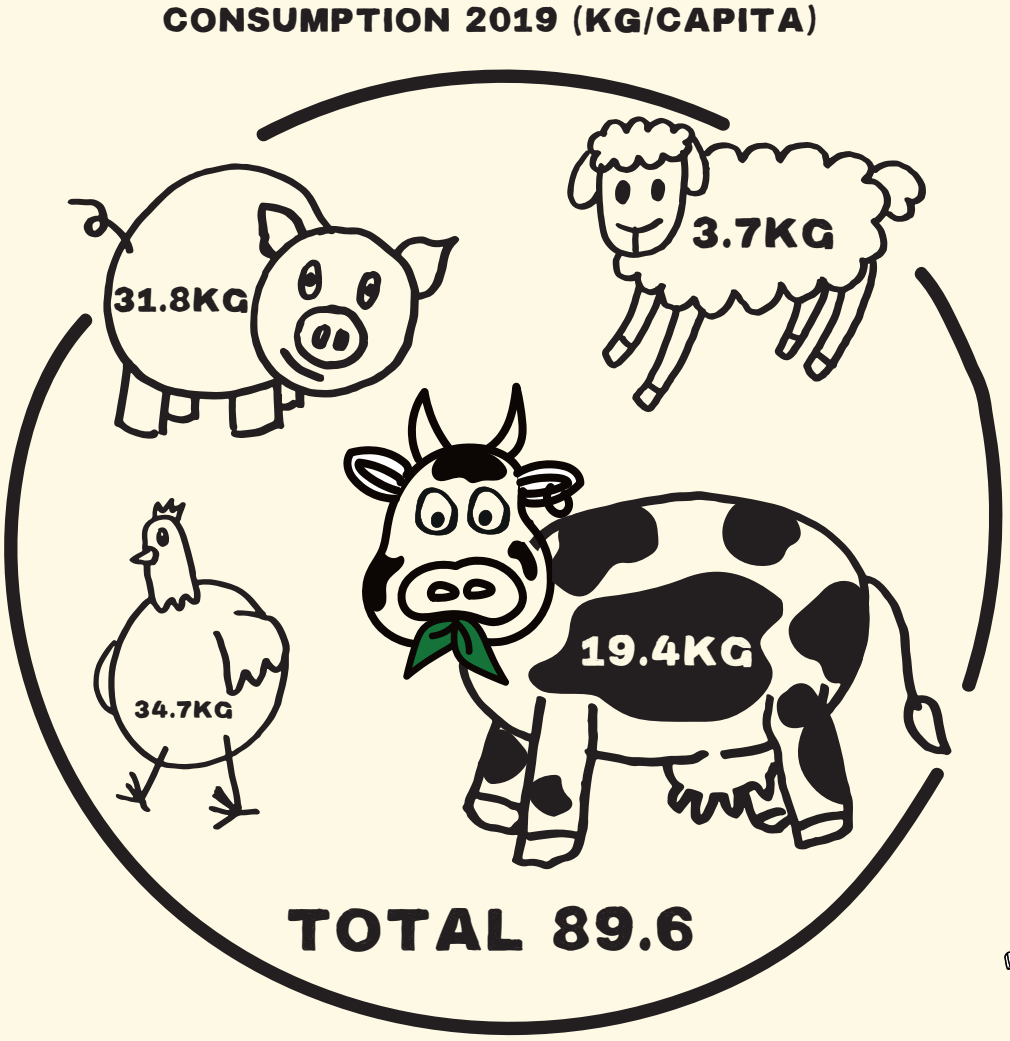
GREEN FOR MICRO REPORT

Replacing animal products in your diet can significantly reduce your carbon footprint. According to the Central Statistics Office (CSO), in 2019, Irelands population consumed 89.6kg of meat and meat products per person. If each person in Ireland opted for a plant-based diet 1 day a week, the reduction in emissions would equate to removing all of the cars in Dublin for over 2.5 months (Appendix 1). Through adopting a plant-based diet, the production of food transitions from a significant source of greenhouse gasses to a net carbon sink, absorbing CO2 and releasing oxygen through photosynthesis.

Animal product production also places a huge demand on global water supplies. A study conducted by the Department of Water Engineering and Management at the University of Twente in the Netherlands investigated the water footprint of a selection of food products. The study found that, on average, a single kilogram of beef requires a total of 15,415 Litres of water to produce, while a kilogram of pork requires 5,988 litres of water. Thanks Plants apple and sage sausages require approximately one quarter of the water that a pork-based product requires at only 1,640 litres per kilogram. By replacing pork products with a planet friendly Thanks Plants alternative, each pack of sausages saves as much water as showering daily for two weeks.



GREEN FOR MICRO REPORT

FOOD ITEM	GREEN WATER	BLUE WATER	GREY WATER	TOTAL
Thanks Plants: Apple & Sage	1,264	130	247	1,640
Thanks Plants: Sundried Tomato & Herb	1,193	125	247	1,565
Thanks Plants: Frankfurter	1,251	128	249	1,629
Thanks Plants: Everyday Roast	933	104	179	1,216
Beef	14,414	550	451	15,415
Chicken Meat	3,545	313	467	4,325
Sheep Meat	8,253	457	53	8,763
Pig Meat	4,907	459	622	5,988

Source 4Mekonnen and Hoekstra (2012)

The study conducted by Mekonnen and Hoekstra focused on global average water consumption which does not account for the high levels of precipitation in Ireland. Studies conducted by Teagasc found that the average water footprint of beef in Ireland was 8,391 L/kg, still more than 5 times higher than the water footprint of a kg of Thanks Plants plant-based alternatives.

Reducing our consumption of animal-based products can reduce the greenhouse gas emissions and water consumption globally. A plant-based diet is a far more resource efficient approach to meeting the growing food demand globally while reducing our impact on the earth than meat-based alternatives.

Appendix 1

DESCRIPTION	2019
Animal Related Emissions (ktCO2 eq.)	14,320
Total Meat Production ('000 tonnes CWE)	1,157
Total Meat Imports ('000 tonnes CWE)	292
Total Meat Exports ('000 tonnes CWE)	1,008
Total Meat Domestic Use ('000 tonnes CWE)	440
Total Meat Domestically Produced & Consumed ('000 tonnes CWE)	149
Meat Domestically Produced & Consumed (%)	13%
Domestically Consumed Emissions (kt CO2 eq.)	1,844
Go Vegan 1 day a week emission reduction (kt CO2 eq.)	263
Total Emissions from Private Cars Registered in Dublin (ktCO2)	1,166

Source 5 Central Statistics Office, Sustainable Energy Authority of Ireland

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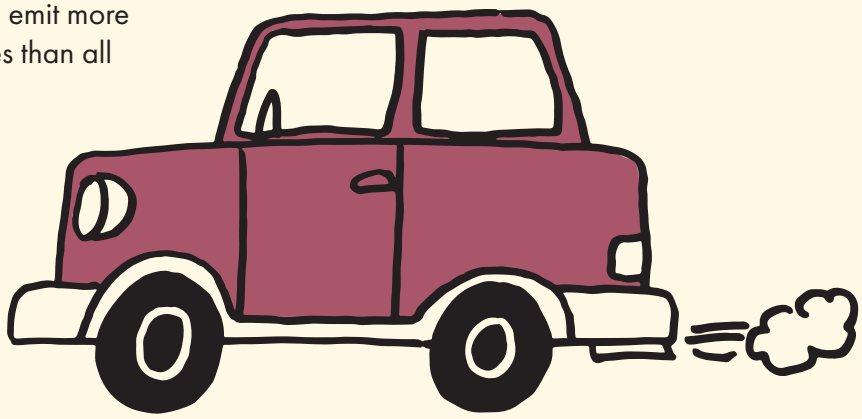
HEADLINES

If each person in Ireland opted for a plant-based diet 1 day a week, the reduction in emissions would equate to removing all of the cars in Dublin for over 2.5 months.

24%

of all emissions in Ireland come from Animal Agriculture

Animals in Ireland emit more greenhouse gasses than all of the transport



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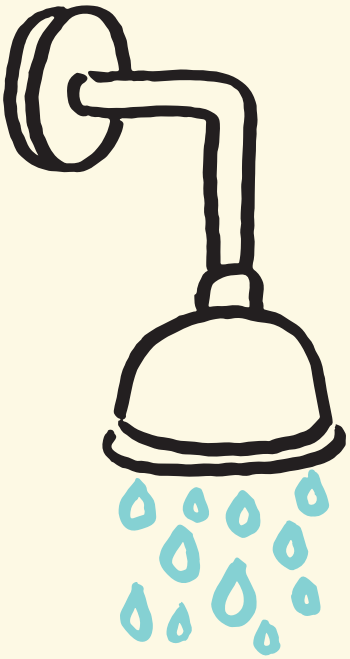
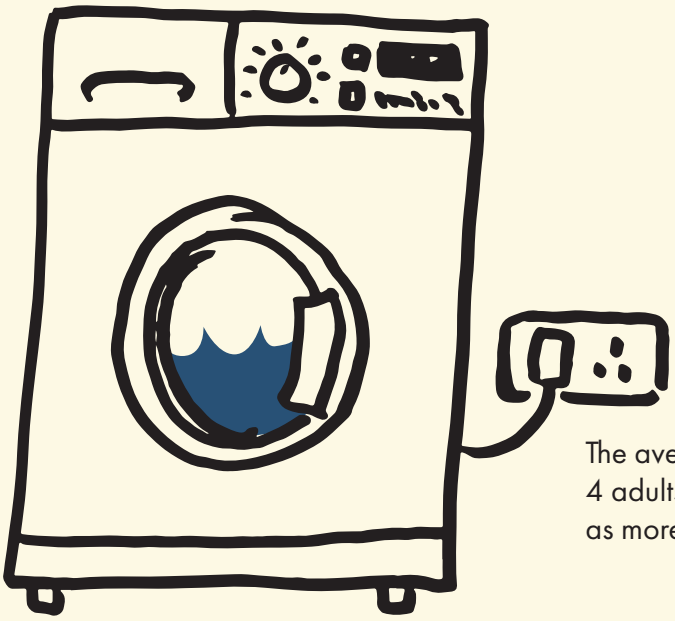
Swapping 1 packet of pork sausages to Thanks Plants Sausages saves enough water to shower daily for nearly 2 weeks.





The average annual meat consumption of 4 adults in Ireland requires enough water as more than 35,000 loads of washing.

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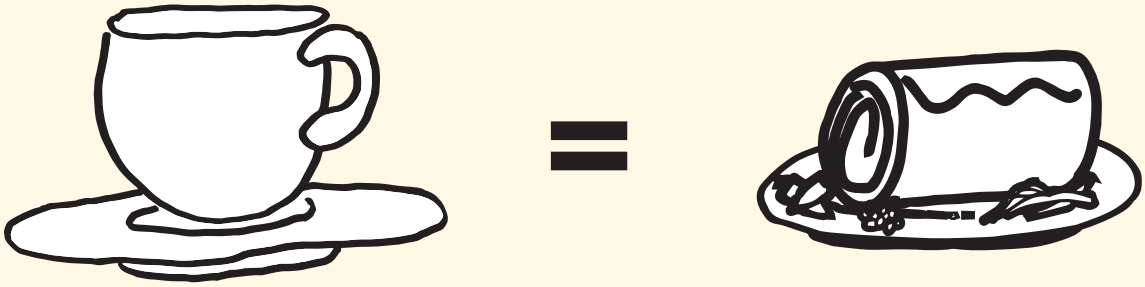
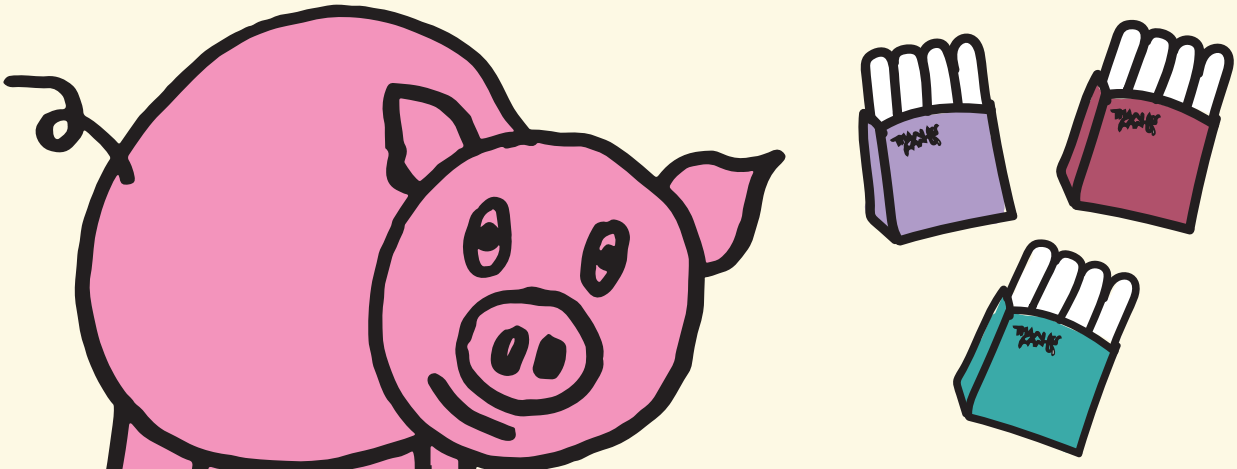


Swapping a 200g serving of beef for Thanks Plants Everyday Roast saves enough water for over 11,000 cups of tea



Pork based products require more than 3.5 times more water than Thanks Plants

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REFERENCES

Agriland (2015) 'Irish farms' big green advantage boils down to water availability' [Online].
https://www.agriland.ie/farming-news/irish-farms-big-green-advantage-boils-water-availability/
(Accessed 16 June 2021).

Central Statistics Office (2021) 'Meat Supply Balance' [Online].
https://www.cso.ie/en/releasesandpublications/er/msb/meatsupplybalance2019/en
(Accessed 17 June 2021).

Central Statistics Office (2021) 'Transport Omnibus 2019' [Online].
https://www.cso.ie/en/releasesandpublications/ep/p-tranom/transportomnibus2019/roadtrafficvolumes/
(Accessed 17 June 2021).

Environmental Protection Agency (2021) 'Summary By Gas' [Online].
https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/summary-by-gas/#d.en.84366
(Accessed 17 June 2021).

Environmental Protection Agency (2021) 'Agriculture' [Online].
https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/agriculture/
(Accessed 17 June 2021).

Eurostat (2021) 'Greenhouse gas emissions per capita' [Online].
https://ec.europa.eu/eurostat/databrowser/view/t2020_rd300/default/table?lang=en
(Accessed 18 June 2021).

Food and Agriculture Organisation of the United Nations (2021)
'Food systems account for more than one third of global greenhouse gas emissions' [Online].
http://www.fao.org/news/story/en/item/1379373/icode/
(Accessed 18 June 2021).

House of the Oireachtas (2019) 'Debtates' [Online].
https://www.oireachtas.ie/en/debates/question/2019-05-09/40/#pq_40
(Accessed 14 June 2021).

Lewis, A. (2018) 'We depend two times more on imported animal feed than our neighbours',
The Irish Examiner [Online] 15 Mar.
https://www.irishexaminer.com/farming/arid-30832683.html
(Accessed 14 June 2021)

McCormack, C. (2021) 'Ireland's reliance on feed imports: Will our tillage sector be left blowing in the wind?',
Independent [Online] 19 January.
https://www.independent.ie/business/farming/tillage/irelands-reliance-on-feed-imports-will-our-tillage-sector-be-left-blowing-in-the-wind-39983324.html#:~:text=As%20it%20stands%2C%20Ireland%20has,according%20to%20Tillage%20Industry%20Ireland.
(Accessed 14 June 2021).

Mekonnen, M.M., Hoekstra, A.Y. A Global Assessment of the Water Footprint of Farm Animal Products.
Ecosystems 15, 401–415 (2012).
https://doi.org/10.1007/s10021-011-9517-8

Sustainable Energy Authority of Ireland (2021) 'Transport' [Online].
https://www.seai.ie/data-and-insights/seai-statistics/key-statistics/transport/
(Accessed 18 June 2021).

Teagasc (2020) 'The Irish Pig Sector' [Online].
https://www.teagasc.ie/animals/pigs/general-information/
(Accessed 16 June 2021).

Van Der Zee, B. (2018) 'What is the true cost of eating meat?', Irish Times [Online] 10 May.
https://www.irishtimes.com/life-and-style/food-and-drink/what-is-the-true-cost-of-eating-meat-1.3490400
(Accessed 17 June 2021).

Walsh, S. (2019) Soybean production could soon be 'the norm' in Ireland'', Agriland [Online] 24 January.
https://www.agriland.ie/farming-news/soybean-production-could-soon-be-the-norm-in-ireland/
(Accessed 14 June 2021).