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**CO-CREATE**

# System mapping: obesity policy levers Deliverable 4.3

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## Executive Summary

The work presented in this report arises from a qualitative study that is a core primary research component of the CO-CREATE project, Work Package 4 (Obesity System Mapping), led by The London School of Hygiene and Tropical Medicine. This report presents 'action ideas' – incipient policy suggestions to counter the prevalence of obesity. The action ideas arose from the final stage of 'systems mapping' workshops with groups of adolescents, in which they identified key factors perceived to be driving obesity in young people. Included in this report are the action ideas from system mapping workshops with adolescents in Poland, Portugal, The Netherlands, Norway, South Africa, and the United Kingdom. The ideas presented here will be taken forward to CO-CREATE Work Package 5 in which adolescents will form Alliances to develop fuller, systems-level policy responses to the problem of adolescent obesity.

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## List of acronyms / abbreviations

| CLD | Causal loop diagram |
|-----|---------------------|
| GA | Grant Agreement |
| GMB | Group model building |
| STICKE | Systems thinking in community knowledge exchange [software] |
| UK | United Kingdom |
| WCRF | World Cancer Research Fund |
| WP | Work package |

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# Introduction

## Deliverable description

In line with the European Commission Research Executive Agency/ Horizon 2020 Grant Agreement number 774210 — CO-CREATE, this report fulfils the requirement of Deliverable 4.3 from Work Package 4: *"A report outlining a prioritised set of potentially important policy levers derived from the systems maps generated in Task 4.1 will be provided. This report will be used as the basis for work in WP5."*

## Objective of deliverable

The objective of the deliverable is to present hypothetical policy ideas for countering the rising prevalence of adolescent obesity in Europe. The proposals were generated by young people during workshops in which they created system maps of the factors they perceived to lead to obesity (see Deliverable 4.1). Based on the factors in the maps, the workshop participants developed 'action ideas' i.e. potential interventions to help mitigate the role of the factors in determining adolescent obesity. The data presented here are the results of workshops with adolescents in Norway, Poland, Portugal and the United Kingdom.

## Background

It is widely recognised that obesity is a product of the complex interaction of multiple factors, be they social, economic, environmental, biological and more (Butland, 2007; Rutter, 2012; Swinburn et al., 2011). Such complexity is also widely recognised to be one of the factors behind the intractable nature of several public health challenges such as rising population obesity prevalence; indeed responses that take account of this complexity are notoriously elusive (Chapman, 2002; Rutter et al., 2017). Since the publication in 2007 of the UK Government Foresight report *Tackling Obesities: Future Choices* (Butland, 2007), complex systems thinking has become a popular framework for conceptualising obesity, examining its determinants, and planning interventions. CO-CREATE takes a complex systems approach to adolescent obesity which means that such a framework underpins the entire project. (For more detail on such an approach, see Deliverable 4.1)

## Mapping the obesity system

One of the key ways in which systems are used to conceptualise a given problem is in 'systems maps'. Such diagrams are usually generated in a participatory manner, under the banner of 'participatory conceptual mapping' using one of various methods (Burke et al., 2005; Hovmand, 2014; Newell & Proust, 2012).

The systems mapping process has a range of applications but broadly, they are summarised in Figure 1. Although not all of these qualities are uppermost in CO-CREATE WP4, they all underpin the process of mapping the determinants of adolescent obesity with stakeholders. In this case, those are adolescents in five European countries (the Netherlands, Norway, Poland, Portugal, the United Kingdom) and South Africa, and European-level policy-makers and academics. The maps are useful

not only for generating hypotheses on the determinants of adolescent obesity, but also on potential responses to the problem. While CO-CREATE WP2 focuses on policy assessment and monitoring of existing anti-obesity policies, a core purpose of CO-CREATE as a whole, is to generate *novel* policy ideas. The first stage of this has therefore been done during WP4, the mapping workshops, wherein participants are asked to use the maps they create, to identify policy amenable drivers of adolescent obesity. (The workshop with the topic experts was to generate a system map of adolescent obesity, not to take the process to the next stage of coming up with 'action ideas'; therefore, this report contains only the 'action ideas' from the adolescents' sessions.)

- As a tool to illustrate and make sense of a system
- To conceptualise complexity
- To represent relations between factors on the maps
- To generate deep, shared insights into the problem
- To support collaborative development of policy / interventions / evaluations
- To guide / complement a work plan
- To facilitate coordinated response
- To help generate hypotheses

**Figure 1: Why use participatory systems mapping?**

## Methodology: systems mapping to policy-amenable drivers

The method used in CO-CREATE WP4 is 'group model building' (GMB) which derives from the tradition of systems dynamics. As such, participants generated causal loop diagrams (CLD, see Figure 2) that represent their perceptions of the drivers of adolescent diet and physical activity, and hence, obesity. The final stage of the mapping sessions involves guiding participants through the process of identifying 'action ideas' – places to intervene in the system that may have a mitigating effect on adolescent obesity (Allender et al., 2015; Brennan, Sabounchi, Kemner, & Hovmand, 2015; Hovmand, 2014). These "leverage points" (Meadows, 1999), as identified by the workshop participants, provide hypotheses about potential policy responses to adolescent obesity, and factors on the map that influence it.

*"The essence of a dynamic problem is then how to intervene in a system through one or more leverage points to change the dynamic from the status quo or undesired pattern to the desired pattern representing a solution."*

(Hovmand, 2014)

### Mapping the system

Group model building (Allender et al., 2015; Brennan et al., 2015; Hovmand, 2014) was used to elicit CLD with adolescents, aged 16-18 in six countries (Netherlands, Norway, Poland, Portugal, South Africa and the United Kingdom). Using this method, workshop participants are guided by a trained facilitator through staged exercises to generate variables and connections between them. These are illustrated in real time in front of the participants by a modeller, using STICKE (Systems Thinking in

Community Knowledge Exchange) software ( https://sticke2.deakin.edu.au ). Figure 2 shows an example of a map created by adolescents during a CO-CREATE WP4 workshop. Full details of recruitment and the methodology are given in Deliverable 4.1.
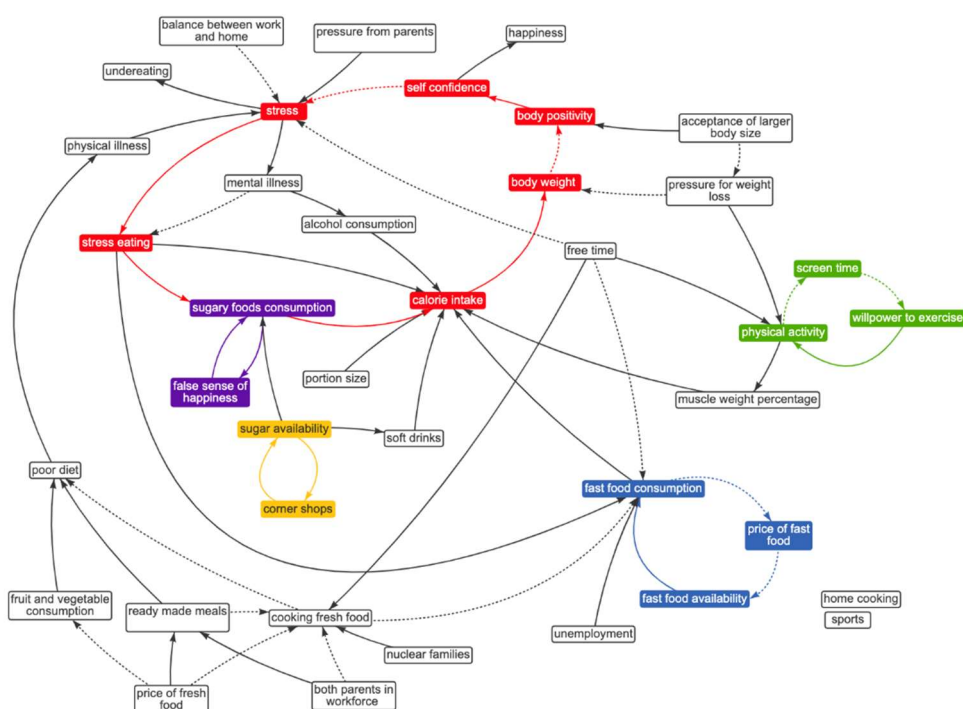


**Figure 2: Adolescent obesity – sample CLD from CO-CREATE mapping session**

## From maps to 'action ideas'

Once the workshop participants have had the opportunity to review the CLD and ratify that it represents their views, they are guided through a process to identify points in the map where interventions may help mitigate the problem – adolescent obesity. They are asked to choose an area of the CLD that they think is particularly important, or amenable to change or that interests them; they are told that areas where there are feedback loops may contain particularly strong leverage points. Participants are shown an 'action idea' template and an example prepared by the facilitator (see Figure 3); are shown how to use the template to represent their ideas, considering the following questions/instructions:

- "What could be done to make things better?"
- "Try brainstorming ideas for what action could be taken."
- "Draw an area you think is important in the template."
- "Write down an idea for an action we could take to improve things."

The participants are asked to spend some time coming up with action ideas, and to write each down on a template sheet, focusing on detail rather than a larger number of ideas. The ideas are then shared around the room and notes are taken to represent the discussions.
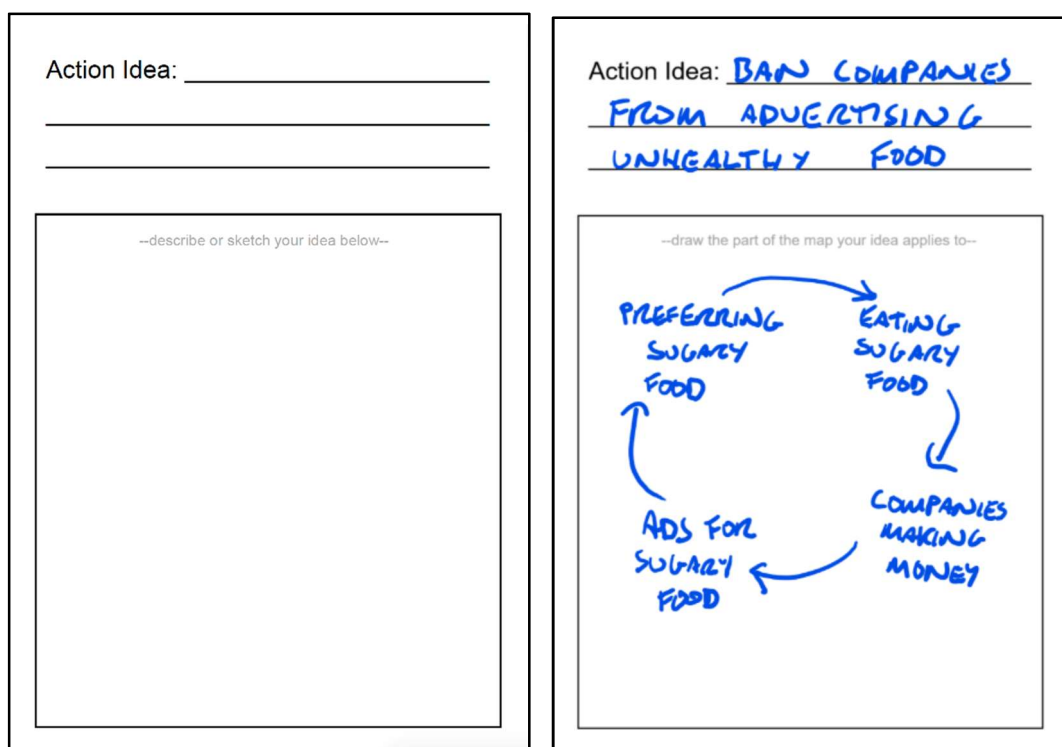


**Figure 3: Action Idea template and example**

## Results: opportunities for policy interventions

The action ideas developed by adolescents were examined for common themes. Across all participating countries, the action ideas could be grouped very broadly into four core themes:

- Increasing physical activity
- Increasing healthy eating
- Media influence
- Mental health

Within each theme was a wide variety of suggestions, many including financial deterrents and incentives; media comprised both traditional such as advertising on television and social media exposure. Mental health encompasses a wider range of issues including stress, anxiety, depression and body image concerns. What follows is brief extrapolation on those themes for each country. Full data are provided in the Appendix. However, given the intensive focus on generating policy action

ideas in WP5/Youth Alliances and WP6/Dialog Fora, we used this part of the obesity mapping to pilot the process. The examples given here therefore provide merely an illustration of the kinds of ideas that will be explored in much greater depth, and worked up fully, in WP5-7

### Norway
Financial mechanisms such as "increase the price of fast food" were suggested to improve diet, while "cheaper membership of fitness centres" was proposed to increase physical activity by students in Norway. Suggestions related to mental health included "fight bullying" and starting school later so that students could sleep for longer. There was also a suggestion to "take away addictive factors on social apps" with the aim to reducing screen time.

### Poland
Measures proposed by students in Poland to improve diet quality included "subsidies for healthy food in schools". They also put forward various mechanisms to reduce stress levels such as: "changing the ideal of beauty" and «improving sleep hygiene". To raise physical activities levels, suggestions included «access to places where you can exercise" and increasing the amount of sports and activity in schools.

### Portugal
Students in Portugal put forward several suggestions to increase prices of "fast food" and sugary foods such as taxation. Some also suggested legal measures to limit the amount of sugar in foods. There were also various suggestions to make doing physical activity more affordable such as "Reduction of gym membership fees". Some students also proposed measures to reduce the workload at school and a «decrease in school hours to prevent stress, anxiety and tiredness".

### United Kingdom
In the UK there were suggestions for various financial mechanisms to increase healthy eating such as "putting higher taxes on fast food, and lower taxes on fresh food (veg, fruits etc.)". Despite mental health and stress/anxiety issues arising considerably in the system maps (see D4.4), only a few action ideas related to mental health such as «provide therapy or free help in schools". Changing the advertising environment to «remove fast food ads from kids programming" and promote healthy eating were also suggested.

### South Africa
Adolescents in public schools in South Africa write exams in May and no access is allowed to schools during this time; then they are on holiday in June. The third school term is from 9 July to 20 September 2019. Therefore, the following have been planned for mapping sessions:

22-25 July:              Session #1 at School 1

29 July-1 August:        Session #2 at School 1

                         Session #1 at School 2

5-8 August:              Session #2 at School 2

12-15 August:            Session #1 at School 3 and School 4

22-25 August:                  Session #2 at School 3 and School 4


**Netherlands**

At the time of reporting work was ongoing in the Netherlands to finalise recruitment of adolescents for the mapping sessions and to finalise workshop dates with them.

1. Almere; 10 participants; 19 and 20 June
2. Almere; church group currently in discussion about setting up a session
3. Amsterdam; group in high school; 24 June and1 July
4. Amsterdam; through contacts of a CO-CREATE staff member, a group is being set up.


# What next for the data?

The 'action ideas' raised by the adolescents in the workshops, and versions of the maps themselves will be taken forward to the Youth Alliances being set up in CO-CREATE WP5. Here, there will be more time and scope to develop systems perspectives on the determinants of adolescent obesity and explore potential policy responses arising from the maps and identified action areas. Furthermore, in WP7, the CLD will be worked on by systems dynamics modellers who use them to create computational simulations of potential policy outcomes. Therefore, the generation of action ideas in the WP4 obesity mapping sessions, were in effect a pilot scheme to help inform the in-depth work that will be carried out in WP5 and further in the dialog fora of WP6.

Additionally, the determinants of adolescent obesity represented in the CLD, as well as the action ideas, will be synthesised with data from WP2 and WP3 for Deliverable 4.2, due in January 2020: *A report with an overall conceptual model of the factors driving obesity among adolescents in Europe.* The information from WP2 will consist of "a global scan of regional and national policies promoting healthy diets and physical activity (with a particular focus on policies in European countries)" (GA) carried out by CO-CREATE partner, the World Cancer Research Fund. WP3, conducted by the Norwegian Institute of Public Health will help contextualise the data from the mapping sessions by providing "existing evidence regarding effective measures to prevent overweight and obesity among adolescents" and analysis of "time trends and differences in energy balance related behaviours, overweight and obesity rates by socio-economic status" and "in relation to changes in national obesity, diet and physical activity related regional and national policies indexes". (GA)

# References

Allender, S., Owen, B., Kuhlberg, J., Lowe, J., Nagorcka-Smith, P., Whelan, J., & Bell, C. (2015). A community based systems diagram of obesity causes. *PLoS ONE*, *10*(7). https://doi.org/10.1371/journal.pone.0129683

Brennan, L. K., Sabounchi, N. S., Kemner, A. L., & Hovmand, P. (2015). Systems thinking in 49 communities related to healthy eating, active living, and childhood obesity. *Journal of Public Health Management and Practice : JPHMP*, *21*, S55–S69. https://doi.org/10.1097/PHH.0000000000000248

Burke, J. G., O'Campo, P., Peak, G. L., Gielen, A. C., McDonnell, K. A., & Trochim, W. M. K. (2005). An introduction to concept mapping as a participatory public health research method. *Qualitative Health Research*, *15*(10), 1392–1410. https://doi.org/10.1177/1049732305278876

Butland, B. (2007). *Tackling obesities: future choices. Project report* (2nd ed.). Government Office for Science, London: Dept. of Innovation Universities and Skills. Retrieved from http://bis.gov.uk/assets/foresight/docs/obesity/obesity_final_part1.pdf

Chapman, J. D. (2002). *System Failure*.

Hovmand, P. S. (2014). *Community Based System Dynamics*. Springer New York. https://doi.org/10.1007/978-1-4614-8763-0

Meadows, D. (1999). Leverage Points: Places to Intervene in a System. *The Sustainability Institute*. Retrieved from http://www.sustainabilityinstitute.org/pubs/Leverage_Points.pdf

Newell, B., & Proust, K. (2012). Introduction to Collaborative Conceptual Modelling. *Working Paper, ANU Open Access Research*, (August). Retrieved from https://digitalcollections.anu.edu.au/handle/1885/9386

Rutter, H. (2012). The single most important intervention to tackle obesity…. *International Journal of Public Health*, *57*(4), 657–658. https://doi.org/10.1007/s00038-012-0385-6

Rutter, H., Savona, N., Glonti, K., Bibby, J., Cummins, S., Finegood, D. T., … White, M. (2017). The need for a complex systems model of evidence for public health. *The Lancet*, *6736*(17), 9–11. https://doi.org/10.1016/S0140-6736(17)31267-9

Swinburn, B. A., Sacks, G., Hall, K. D., McPherson, K., Finegood, D. T., Moodie, M. L., & Gortmaker, S. L. (2011). The global obesity pandemic: shaped by global drivers and local environments. *The Lancet*, *378*(9793), 804–814.

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