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Voluntary agreements between government and business – a scoping review of the literature with specific reference to the Public Health Responsibility Deal

Abstract [200 words]

Objectives: A scoping review was conducted to synthesise the findings of evaluations of voluntary agreements between business and government. It aimed to summarise the types of agreements that exist, how they work in practice, the conditions for their success and how they had been evaluated.

Methods: Voluntary agreements were included if they involved a transparent signing-up process and where businesses agreed to carry out specific actions or to achieve specific outcomes. Studies of any design published in English were included.

Results: 47 studies were identified. Voluntary agreements may help to improve relationships between government and business, and can help both parties agree on target-setting and data-sharing. Governments may also use the experience to help develop subsequent legislation.

For voluntary agreements to be successful, targets should be ambitious and clearly defined, with robust independent monitoring. Public knowledge of agreements can help encourage participation and ensure compliance.

Conclusions: If properly implemented and monitored, voluntary agreements can be an effective policy approach, though there is little evidence on whether they are more effective than compulsory approaches. Some of the most effective voluntary agreements include substantial disincentives for non-participation and sanctions for non-compliance. Many countries are moving towards these more formal approaches to voluntary agreements.

Keywords: literature review; public health; evaluation; voluntary agreement

Main text: 5110 words

1. Introduction

The Public Health Responsibility Deal (RD), launched in England in March 2011, aims to bring together public sector, academic, commercial and voluntary organisations in five networks (covering food, alcohol, physical activity, health at work and behaviour change) to help meet public health goals. Central to the approach is the development of collaborative relationships between business, the voluntary sector and government. The RD was described as follows by the Department of Health [1]:

Review
“The Public Health Responsibility Deal tap[s] into the potential for businesses and other
organisations to improve public health and tackle health inequalities through their influence
over food, alcohol, physical activity and health in the workplace... Partners signing up ...
have committed to take action to improve public health. This action is expressed as a series
of pledges covering food, alcohol, physical activity and health at work. These pledges are
not intended to replace Government action.”

In his foreword to the launch report [2], the Secretary of State for Health also stated that:

“By working in partnership, public health, commercial and voluntary organisations can
agree practical actions to secure more progress, more quickly, with less cost than
legislation”.

The RD acts as a mechanism which aims to bring about voluntary partnerships to produce
specific pledges and is one among several national [3] and international [4] voluntary
agreements designed to contribute to public health objectives. Some previous voluntary
agreements have reported positive results. For example the EU Pledge Programme, a
voluntary agreement by food and drink companies to change their advertising strategies
targeted at children has been independently monitored on an annual basis and reports a
positive record of compliance [4]. However, drawing on the long-standing experience of
tobacco control [5, 6], the public health community has been sceptical of the long-term
effectiveness of such voluntary initiatives. Investigations into the public health effectiveness
of previous voluntary agreements by the food and drinks industries to self-regulate have
found the agreements to be inadequate [7], with discrepancies between promised and actual
changes made, [8, 9] and little sign that they have been effective in reducing consumption
and reducing harm [10, 11].

One of the main criticisms which has been levelled at voluntary agreements like the Public
Health RD is that industry’s views and interests are prioritised, and that organisations with
financial and commercial interests that may be at variance with public health goals are put in
a position to set the agenda for health improvement [12]. Critics also point to evidence that
government regulation is more effective in bringing about public health benefits, as supported
by studies of the positive health impact of alcohol control policies [11, 13-15], and have
suggested that voluntarism means that governments have largely renounced their
responsibility to implement a comprehensive, evidence-based and cross-sectoral strategy to
improve the public’s health [16].

Since there is experience of similar agreements outside public health, there is a strong case
for exploring the conditions and the degree to which these voluntary agreements are effective,
and whether there are lessons for public health and the development of the RD to be learned
about the conditions affecting the success, or lack of success, of previous voluntary
agreements. This paper reports on the findings of a scoping review on the operation and
evaluation of such voluntary agreements between government and business. The review was
undertaken as part of a wider project sponsored by the Department of Health in England to
help plan evaluation of the RD in England. Its objectives were to identify the rationales for
voluntary agreements in public health and other sectors, and to identify their impacts and the
conditions that appeared to be associated with more and less successful agreements in terms
of public policy goals. It also aimed to obtain pointers to ways in which the RD could be
changed or implemented differently to enable it to operate more effectively. The review
therefore sought to answer the following specific questions:
1. What are the different types of voluntary agreements?
2. Why do governments develop voluntary agreements?
3. Why do businesses join voluntary agreements, and which businesses join?
4. How are voluntary agreements received by those who do or do not participate?
5. What are the potential problems and enabling factors? Are voluntary agreements effective in achieving their goals?
6. Are voluntary agreements worthwhile (do benefits exceed costs)? and,
7. How have voluntary agreements been evaluated and what can be learned for future evaluations of voluntary agreements?

2. Methods

Scoping reviews aim “to map rapidly the key concepts underpinning a research area and the main sources and types of evidence available... where an area is complex or has not been reviewed comprehensively before” [17]. Thus they are suitable for preliminary examination of a field of research, sometimes as a precursor to a full systematic review [18]. They differ from full systematic reviews in that they are conducted to identify the range and type of evidence within a field, without conducting an in-depth appraisal of each study. We adopted the following definition of a voluntary agreement for the purposes of the review – “a contract between the government and industry, or negotiated targets with commitments and time schedules on the part of all participating parties” [19]. The focus was on identifying evidence from previous studies of voluntary agreements between governments and businesses, within any sector, that were structurally or operationally similar to the RD.

2.1 Inclusion criteria
Voluntary agreements between governments or government bodies and individual businesses or industry groups were included, where there was a transparent signing-up process and where businesses agreed to carry out specific actions or to achieve specific outcomes. Industry sectors were classified using an amended version of the Office for National Statistics’ Standard Industrial Classification of Economic Activities [20]. Studies evaluating processes or outcomes were included, and these could be either primary or secondary analyses. Studies of any design were eligible. Only English language studies from any country were included. Eleven databases were searched: ASSIA, Business Source Premier, Econlit, Greenfile, HMIC, MEDLINE, NHS Economic Evaluation Database, PAIS, Science Citation Index, Social Policy and Practice and Social Science Citation Index. Full details of the search strategy are available from the authors.

Data relevant to each of the main review questions were extracted and are summarised below. Data on the setting, aims and methods of evaluation where this could be deduced were also extracted, and are summarised narratively. We did not undertake a quality assessment of included studies because of the diversity of methods and the lack of methodological information reported in many studies. This approach is consistent with the aims and methods of scoping reviews in general.

3. Results
The search initially resulted in 2368 titles and abstracts. From these, 47 studies met the inclusion criteria, representing evaluations of 36 different voluntary agreements (Table 1 - some voluntary agreements were evaluated in more than one study). Over half were from
Europe (Table 2), and most were from the last 20 years (Table 3). Half were on general environmental agreements (e.g. improving energy efficiency) (Tables 1 and 4).

The findings are presented below under the main themes/review questions.

3.1 What are the different types of voluntary agreements?
A review of environmental programmes suggested that there are three categories of voluntary agreements [21]: (i) Agreements that are completely voluntary where businesses have a totally free choice on whether to join and there are no sanctions for non-compliance. (ii) Voluntary agreements that use the threat of future regulations or taxes as a motivation to participate, and (iii) Voluntary agreements implemented in conjunction with an existing tax policy or strict regulations. These agreements usually include well-specified targets, comprehensive monitoring systems and sanctions for non-compliance. The financial disincentives for non-participation in these agreements are often so costly for businesses that they may not be seen as truly ‘voluntary’.

The Public Health Responsibility Deal appears to be a hybrid of the first two approaches. The current pledges on physical activity could be included under the first category, whereas the pledges on food and alcohol could be included under the second category. Although there is no specific threat of legislation for the food and alcohol industries, there appears to be an understanding among many stakeholders that there are alternative options; legislation has been identified as a potential policy approach by public health groups and has been introduced in other countries [22, 23].

3.2 Why do governments develop voluntary agreements?
A government’s rationale for taking action through a voluntary agreement was described in two-thirds of the included studies, and included the perception that voluntary agreements are a cheaper, quicker alternative mechanism for changing the behaviour of business and the public compared to introducing, monitoring and enforcing legislation [24, 25]. A government may wish to be seen to take rapid action on a controversial policy issue [26, 27] or to take action whilst protecting the economic interests of the country and thus be attracted to the voluntary option. For example, in an environmental agreement in Germany there was substantial pressure from the ministry of economic affairs to attempt a voluntary approach, in order to avoid any potentially negative economic impacts of regulation [28].

Voluntary approaches may also be a result of pressure from industry, particularly where the specific industry group can exert political power [29] or where governments may adopt voluntary agreements to improve relationships with industry [30]. Governments may wish to join forces with industry to promote improvement in societal attitudes, such as in an agreement on making workplaces more inclusive [31]. Governments may also want to access industry data [32, 33], or to adopt voluntary approaches where a policy area is underdeveloped, as in the case of a voluntary agreement in Germany to gradually reduce the levels of acrylamide (a potential carcinogen) in food products [34]. Voluntary agreements may also be introduced in order to help develop subsequent legislation [33]. They may also be introduced as part of a wider policy package. A policy issue may be complex and multi-faceted, requiring a range of actions – for example, a UK agreement on alcohol labelling was seen as part of a wide-ranging campaign to raise awareness on alcohol-related harm [24]. They may also be a preferred alternative, or supplement, to weak national legislation [35].

3.3 Why do businesses join voluntary agreements, and which businesses join?
The initial proposal to develop a voluntary agreement often comes from industry, particularly when there is a threat of legislation. Businesses may do so to avoid mandatory actions, or to prepare for compliance if necessary; or to avoid or reduce the financial costs related to legislation, such as financial penalties for non-compliance and implementation costs. Businesses may also participate in order to help governments better understand which actions and targets are achievable and which are not. They may wish to achieve recognition for actions already being taken, for example if they have concluded that the likely government target is achievable and are already working towards it. Businesses may also join a voluntary agreement for marketing purposes, especially if they have a poor public image or if there is increasing pressure from the public or from lobby groups. Participating in a voluntary agreement may be seen by the public as better behaviour than being ‘forced’ to take action through legislation, thereby raising the reputation of a firm. Some voluntary agreements explicitly offer public recognition as an incentive to businesses, for example, by allowing businesses to use a logo on products, by publishing a list of participants or by offering awards for outstanding achievements. Businesses may also simply want to improve their relationship with government, and to take advantage of incentives. For example, governments have offered an expensive environmental audit of a business, have conducted workshops and provided an information exchange to facilitate the sharing of information and learning between businesses and the regulatory agency and have offered exclusive access to advantageous business locations.

Voluntary schemes that are highly visible to businesses and the public appear to have high participation rates and coverage. Public image can be used to help encourage compliance and to strengthen an agreement: for example a public announcement of poor performance by a firm within an agreement can be used as an effective sanction and encourage compliance. Some agreements encountered difficulties persuading businesses to sign up. For example, a UK agreement on alcohol labelling was unsuccessful in recruiting some of the major alcohol producers, resulting in limited market coverage and problems with achieving the target which was based on a percentage of the market share. This was believed by some commentators to be due to of a lack of commitment to labelling on the part of the drinks industry. However, agreements signed with industry groups or closely linked to large, prominent national schemes appear to have high participation rates and/or coverage. High participation rates were also found for agreements that offered a reduction in, or avoidance of, a costly tax.

Some studies investigated differences between participating and non-participating businesses. For example, an evaluation of a voluntary agreement on pollution prevention in the United States found that large businesses, those with high advertising expenditures, those with small market shares and those already participating in other voluntary environmental programs were most likely to participate. In one Chinese study, businesses that participated in a voluntary agreement already had good management and monitoring systems, as well as high levels of social responsibility.

### 3.4 How are voluntary agreements received by those who participate and those who do not?

Nine studies investigated how voluntary agreements were received by interested parties. In five out of six studies of those directly involved in a voluntary agreement (governments and
businesses), the participants viewed the agreements positively [27, 32, 40, 48, 49]. Five studies presented data on the opinions of those not directly involved in a voluntary agreement. Two studies found that environmental organisations held positive opinions about agreements [49, 50], and another three studies found concerns expressed by those outside a voluntary agreement [26, 27, 37]. In a UK agreement on energy efficiency in the chemical industry, doubts had been expressed as to whether the targets represented a real improvement [26].

3.5 What are the potential problems and enabling factors with voluntary agreements?

There are many potential barriers to successful implementation of a voluntary agreement. Conflict within government may result in a lack of a credible threat of legislation, thus resulting in a stronger negotiating position for businesses. Governments may be concerned that legislation could reduce consumer choice by reducing the number of products entering the market – for example, because of strict alcohol labelling standards [24]. In addition, industry may encourage a government to introduce a voluntary agreement by arguing that proposed legislation would primarily have a negative impact on sales, resulting in unemployment [51]. Specific problems identified here relate to the content of the agreement, the signing-up process, the targets agreed, incentives, sanctions, monitoring of compliance, management of the agreement and non-government support for implementation.

Some agreements may be limited by focusing only on one aspect of a problem [28, 37, 52-54]. For example, a UK agreement on tobacco advertising only focused on restricting poster advertising, even though shop-front advertising was more prevalent [53, 54]. However, although a voluntary agreement may not include all important measures to address a specific policy issue, it may be viewed as a significant development which can subsequently be built upon [37].

If an agreement does not involve a strong commitment, its achievement depends solely on the good will of businesses to take the actions as agreed [31, 37]. Requiring senior managers to sign an agreement may help to ensure an organisation’s commitment to achieving the targets set [27]. However, this is only the case if senior managers are keen to implement the agreed measures and to support the staff members implementing the changes [42]. Some voluntary agreements are signed by industrial associations, which may result in a risk of communication difficulties with individual member firms, and potential non-compliance [26]. In an Italian environmental agreement signed by local industrial associations, only 22% of constituent businesses had heard of it [32].

Some targets may not be ambitious enough [30, 55]. Some agreements set targets purposely low at first to allow a settling-in period and then make them more stretching [36]. Some agreements may gradually introduce new measures, thereby allowing potentially harmful business practices to continue for a period of time. For example, a UK voluntary agreement on tobacco advertising allowed businesses to continue to use old health warnings for consumers even though new warnings had been developed [56].

Clearly defined agreements are an enabling factor; conversely a lack of clearly defined targets may be seen as a lack of commitment to the proposed actions. Some agreements may be complex or ambiguous, making it difficult to ascertain whether the targets have been
achieved. For example in the case of a UK agreement on tobacco advertising, it was not clear what constituted a breach in the agreement [53, 57]. Targets that are not quantifiable or that lack time frames make it extremely difficult to assess achievement [28, 32, 37, 42].

Some voluntary agreement targets may represent minimal actions. In a UK agreement on energy efficiency, it was found that the main driving factors for improvement would still have existed without the agreement, including the fact that businesses were already working towards the target under a different voluntary programme [26]. Others may omit important aspects and allow businesses and individuals to circumvent the measures. For example, a payment ban on internet tobacco sales in the United States only applied to credit cards and not to personal cheques, allowing internet companies to continue selling tobacco [52]. If businesses perceive the targets to be unrealistic there may be issues with compliance [32, 58]. In addition, if a baseline for targets is set substantially earlier than the beginning of the agreement, businesses could agree to a target that they are already on their way to achieving [26].

Incentives such as public recognition and information exchange, as mentioned above, can also be enabling, though the benefits need to be large enough to encourage good performance and need to be clearly specified by government to ensure that businesses are aware of, and can take advantage of, them [47]. It is also generally assumed that there will be a business case for participation in a voluntary agreement. Conversely agreements may include sanctions for individual businesses, or for entire industries, if they do not achieve the targets – often involving a concrete threat of legislation. There is a risk that agreements without any sanctions at all [26, 27, 30], or with no credible threat of legislation [29], may allow businesses to gain the benefits of participation with little effort to achieve the targets.

Some agreements have strong monitoring systems in place, usually with a combination of self-reporting and independent verification checks [26, 45]. Businesses usually have to provide their own self-reported monitoring data in a voluntary agreement. If the agreement process is not transparent, or if monitoring data are not published or are of poor quality, the credibility of actions taken under the agreement may be questioned [30, 32]. Strong management of a voluntary agreement by the government can help to ensure its success [42].

Non-governmental organisations (NGOs) may play a key role in the negotiation and implementation of a voluntary agreement. Involving third parties in a voluntary agreement generally increases its credibility.

3.6 Are voluntary agreements effective in achieving their goals?

All voluntary agreements include goals, based on implementing processes (e.g. introducing a recycling system) and/or achieving outcomes (e.g. reducing emissions). Agreements with vague, unquantifiable goals are difficult to evaluate, compared to those with well-specified targets and robust monitoring systems. Some agreements were considered by authors of studies to be effective based on change against targets [25, 33, 36], whilst others had difficulties with achieving their targets [24, 59-61]. Several studies found non-compliance with a UK agreement to limit tobacco advertising, with tobacco companies sponsoring events particularly appealing to young people to circumvent the agreement [60] and with advertisements breaching one or more of the agreement rules [53, 54]. A UK agreement on alcohol labelling only resulted in 15% compliance compared to a target of 50% of labels [24]. This was mainly due to the non-participation of some major alcohol producers.
A number of studies were unable to evaluate the effectiveness of voluntary agreements, for example where the targets of the agreement had not been clearly defined [42]. In general, it appears that those agreements that include appreciable sanctions for non-compliance and/or credible monitoring with publicity are most likely to be effective, though the volume and quality of evidence is such that this conclusion is tentative.

Among the secondary positive outcomes identified in these studies were strengthened relationships between governments and businesses [26, 48, 50]. Positive impacts on attitudes and awareness of businesses on a specific issue [27, 42, 48] and increased competitive advantage for businesses over non-participants were also cited. Through working together on a voluntary agreement, governments and businesses may also benefit from improved expertise and a shared understanding on a specific issue [26] [27]. There may also be spill-over effects to non-participating businesses. For example, an evaluation of a large, national agreement on reducing the use of toxic chemicals in the United States found that non-participating businesses also achieved a reduction [25].

Negative secondary outcomes were also observed, including compensation effects, in which businesses participate in a voluntary agreement which addresses a certain issue, but subsequently increase activities that are not included within the agreement in order to maintain profits. For example, a South African agreement banning television advertising of tobacco resulted in a large increase in radio advertising (which reaches a greater proportion of the population) and sponsorship of sporting events, including those broadcast on television [62].

3.7 Are voluntary agreements worthwhile (do the benefits outweigh the costs)?

In any evaluation an assessment of the balance of benefits and costs is important to determine whether it is worthwhile to different groups of participants. Few studies attempt such an analysis or indeed any form of economic evaluation of voluntary agreements. Nine studies were found which addressed costs and/or benefits, though most were only able to calculate costs. For example, the UK government was not able to calculate the exact costs and benefits of a voluntary agreement on alcohol labelling, due to insufficient evidence on its impact on consumption [24]. Three environmental studies found that voluntary agreements were not particularly costly policy options [27, 30, 55] whereas other studies found that participation in a voluntary agreement was costly for businesses [28, 33]. Other studies found that voluntary agreements were costly to government and/or industry [42] [26, 63]. Overall, given the limited data it is unclear whether voluntary agreements in general are more or less costly than statutory legislation.

3.8 How have voluntary agreements been evaluated?

The two most common types of evaluation were investigations of whether an agreement was successful in achieving its targets and investigations of the reasons why governments or businesses developed, or joined, a voluntary agreement. In general, interviews and surveys were the main methods used in process evaluations, and independent data analysis was the main method in outcome evaluations. Studies that investigated why governments and business enter voluntary agreements used a range of research methods – interviews were conducted with government representatives [30, 39, 42, 63], business representatives [27, 31, 42, 63] and independent consultants involved in implementation of an agreement [42, 63]; surveys of businesses were undertaken [55], and independent analysis of business-level data conducted [35, 64]. Other methods included media analysis [49]. Studies which aimed to
assess whether agreed targets had been achieved most often involved independent data analysis based on monitoring data [24, 34] or on businesses’ self-reported data [48]. Routine data sources were also used in some cases [65]. Researchers carried out their own data collection in some studies, for example, using surveys [60] or observations of business activities [53, 57]. One study based its assessment on publicly available government and industry publications [37], and one study analysed internal industry documents [66]. Scenario modelling was also used to ascertain whether an agreement was likely to be successful [67] [26].

4. Discussion

If properly implemented and monitored, voluntary agreements can be effective and businesses can help to achieve public policy aims, but without a full systematic review it is not possible to determine whether, and in which circumstances, they are likely to be more effective than regulation. However, it should be noted that some of the most effective agreements do not appear to be particularly ‘voluntary’; that is, some of the most effective are those with substantial and financially important incentives and sanctions for non-participation or non-fulfilment of targets. The evidence on whether voluntary agreements are worthwhile (i.e. whether the benefits exceed the costs) is very limited such that no conclusions can be drawn. This lack of evidence may not matter to policymakers and industries advocating their use, if their purpose is primarily political - for example, to avoid the implementation of legislation. This has been claimed by critics of the public health RD who for example have suggested that it is in industry's interests to oppose effective binding regulation by promoting self-regulation via voluntary codes. [77]. It is also possible that assessments of the effectiveness of voluntary agreements are biased, in that there may be a tendency to over-claim their effectiveness by participants in order to avoid more coercive approaches. However, the review has several important implications for developing voluntary agreements in public health, including the Public Health Responsibility Deal. The main one is that agreements without appreciable sanctions for non-compliance and/or credible monitoring with publicity are less likely to be effective. The available evidence also shows that a wide range of factors affects the credibility and effectiveness of a voluntary agreement between business and government. For example, the way in which industry joins a voluntary agreement is important. Sign-up by industry associations may result in wider coverage of eligible businesses, and a strong, public commitment signed by senior managers of businesses may also be effective in ensuring commitment. Targets for businesses need to be realistic, but stretching, to achieve real change. If un-ambitious targets are set, then they should be seen as a starting point to be built upon after a settling-in period.

Targets also need to be clear and specific. Complex or ambiguous targets are not useful; clearly defined, quantifiable targets with time frames, and with a specified baseline for the purpose of comparison, allow evaluation of progress and improve the credibility of the agreement.

The existing evidence also highlights the role of incentives and benefits to making voluntary agreements “work”. Any benefits offered by a government as part of a voluntary agreement need to be clearly specified to help ensure that businesses are aware, and can take advantage, of them. Benefits may include low-cost measures, such as training schemes or public recognition through logos or awards, or higher-cost measures such as environmental audits or co-financing of initiatives. Sanctions for non-compliance also need to be made clear to
businesses, even in voluntary agreements. Without any sanctions, or in the absence of a credible threat of legislation to encourage compliance, businesses may gain the benefits of participation whilst making little effort to achieve the targets, thus undermining the credibility of the agreement. Independent monitoring of progress toward those targets is essential, with checks on data quality.

It is also clear from the review that public image plays an important role, both as a benefit and a sanction. When voluntary schemes are highly visible to businesses and the public and are strongly promoted, participation rates are often high. Public image can therefore be used to help encourage compliance. A public announcement of poor performance by a firm within an agreement can also be used as an effective sanction and encourage compliance.

International organisations have also made recommendations for governments developing voluntary agreements that support the findings of this scoping review. OECD recommends that agreements have clearly defined targets with a specified baseline, robust monitoring systems, third-party participation, information-oriented benefits (such as technical workshops), sanctions for non-compliance and a credible threat of legislation [68]. The European Commission (EC) also provides guidelines for voluntary agreements, with an emphasis on transparency [69]. These include prior consultation with industry and NGOs, a legally binding commitment, quantified targets and the independent verification and publication of results. However the presence of a legal commitment is a departure from the principle of voluntarism, and indeed few voluntary agreements in the literature meet these criteria. For example, the RD partly meets some of these criteria but not others; in particular there are few substantial incentives or benefits to business to participate, legislation appears to be absent as an alternative, and the use of quantified targets is limited.

Implications for evaluation of voluntary agreements
Based on the findings of this review, a robust evaluation of voluntary agreements requires that targets are quantitative, clearly-defined and time-bound, and that a monitoring system is in place from the start, ideally with independent verification of data. It is also important that the evaluation (or different stages of an evaluation) addresses both process and outcomes. For example, Sullivan’s (2005) comprehensive set of criteria for evaluating environmental agreements seems to apply equally to public health agreements and includes effectiveness, economic efficiency, transaction costs (for governments and businesses), competitiveness, “soft” effects (such as attitudinal changes), innovation, acceptability, inclusiveness and public participation, and law and public policy issues (e.g. compatibility with existing institutions) [70]. The evaluation also needs to assess unintended outcomes and spillover effects – that is, effects which extend beyond the main goals of the agreement, such as effects on non-participants. Some form of economic evaluation can also be helpful in bringing together the range of positive and negative impacts of an agreement, in fully understanding its costs and in comparing a voluntary agreement to alternative policy approaches, though such analyses are very difficult to do definitively.

Strengths and limitations
The main strength of this review is that it draws on evidence on how voluntary agreements work in practice in different business sectors, countries and political contexts. Although a scoping review, it was informed by systematic review methods. It aimed to identify common themes and conditions for success, rather than to comprehensively review all previous studies.
of voluntary agreements. However, the relevance of some of the voluntary agreements included to public health policy does need consideration. Half of the studies were on environmental agreements which have had a relatively long history, and are likely to be further advanced than voluntary agreements in other policy areas and industries, including public health. The industries involved are also likely to be different, facing different economic imperatives.

Because the inclusion criteria were based on both the type of study and the type of voluntary agreement, potentially useful studies may have been omitted from this scoping review if there was no clear indication of the nature of the voluntary agreement being evaluated. Possible publication bias also has to be considered, as some voluntary agreements may only have been evaluated in certain circumstances, for example, if they had been particularly effective or ineffective. However, the studies included in this review did provide generally consistent findings for each of the research questions.

5. Conclusions

Voluntary agreements can be an effective policy approach for governments to take to persuade businesses to take actions, although there is very little evidence on whether, and in which circumstances, voluntary agreements are likely to be more (cost-) effective than compulsory approaches. Targets should be ambitious and clearly defined, and a robust monitoring system should be in place. The role of businesses’ public image can be very important both to encourage participation and to ensure compliance. Finally, it is important to note that some of the most effective voluntary agreements are those with substantial disincentives for non-participation and costly sanctions for non-compliance. Many countries are moving towards these more formal and even legally-binding approaches to voluntary agreements.

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**Anonymised**
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### TABLES

#### Table 1 – Brief description of included studies

<table>
<thead>
<tr>
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<th>Voluntary agreement name / identifier</th>
<th>Overall aim</th>
<th>Country</th>
<th>Start date</th>
<th>Reference</th>
<th>Study design / methodology</th>
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<tbody>
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<td>The Voluntary Initiative</td>
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<td>United Kingdom</td>
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<td>Anon, 2005 [48]</td>
<td>Analysis of parliamentary inquiry evidence on the effectiveness of pesticide manufacturers and farmers Voluntary Initiative</td>
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<td>National Scrapie Plan</td>
<td>Reduce the incidence of scrapie (a fatal neurodegenerative disease in sheep)</td>
<td>United Kingdom</td>
<td>2001</td>
<td></td>
<td>Dawson et al, 2008 [71]</td>
<td>Review article describing a UK voluntary programme to control classical scrapie and strategies to minimise future disease risks</td>
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<td>Quantitative analysis of the change in levels of acrylamide in food products as a result of a voluntary agreement to reduce levels</td>
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<td>UK-wide voluntary agreement on alcohol labelling</td>
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<td>Industry</td>
<td>Voluntary agreement name / identifier</td>
<td>Overall aim</td>
<td>Country</td>
<td>Start date</td>
<td>Reference</td>
<td>Study design / methodology</td>
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<td></td>
<td>Voluntary Agreement on Advertising and Labelling</td>
<td>Restrict tobacco advertising, e.g. near schools</td>
<td>United Kingdom</td>
<td>1971</td>
<td>Amos et al, 1989 [53]</td>
<td>Cross-sectional survey of tobacco promotions near places used predominantly by children and young people</td>
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<td></td>
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<td></td>
<td>Amos et al, 1987 [54]</td>
<td>Cross-sectional survey of tobacco promotions near places used predominantly by children and young people</td>
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<td></td>
<td>Hastings &amp; MacFadyen, 2000 [66]</td>
<td>Qualitative analysis of five UK advertising agencies’ internal documents covering tobacco related business in the previous five years</td>
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<td>Nelson &amp; Charlton, 1991 [72]</td>
<td>A survey of 2,433 children from 3 secondary schools to determine whether they saw and remembered cigarette advertisements in national newspapers, magazines or comics in their homes</td>
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<td>Robertson et al, 1996 [56]</td>
<td>Survey of local garages to assess the extent of tobacco advertising and compliance with the Voluntary Agreement on tobacco advertising</td>
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<td>Robertson et al, 1998 [57]</td>
<td>Repeated cross-sectional survey of 56 off-licences and their compliance with the voluntary agreement on tobacco advertising</td>
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<td>Sengupta et al, 2000 [60]</td>
<td>Cross-sectional survey of 16-24 year old students, assessing the receipt of smoking-related 'junk mail' and attendance at music-oriented events sponsored by tobacco companies.</td>
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<td>Pharmaceuticals</td>
<td>Voluntary agreement on child resistant containers</td>
<td>Introduce child resistant medication containers</td>
<td>United Kingdom</td>
<td>1981</td>
<td>Sibert et al, 1985 [61]</td>
<td>Analysis of hospital records from 1980-4 for children under 5 years admitted to hospital because of accidental poisoning to test effect of a voluntary agreement on child resistant pharmaceuticals containers</td>
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<tr>
<td>Industry</td>
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<td>Overall aim</td>
<td>Country</td>
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<td>Reference</td>
<td>Study design / methodology</td>
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<td>Waste &amp; recycling</td>
<td>French end-of-life vehicle voluntary agreement</td>
<td>Reduce landfill from old vehicles</td>
<td>France</td>
<td>1993</td>
<td>Aggeri &amp; Hatchuel, 1999 [73]</td>
<td>Qualitative decision analysis</td>
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<td></td>
<td>Voluntary pledge regarding the environmentally sound management of end-of-life vehicles</td>
<td>Reduce landfill from old vehicles</td>
<td>Germany</td>
<td>1996</td>
<td>Aggeri &amp; Hatchuel, 1999 [74]</td>
<td>Qualitative decision analysis</td>
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<td></td>
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<td>Jorgens &amp; Busch, 2002 [28]</td>
<td>Secondary review of studies on the voluntary agreement</td>
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<td>Dutch Packaging Covenant</td>
<td>Reduce the use of packaging materials</td>
<td>Netherlands</td>
<td>1991</td>
<td>Rouw &amp; Worrell, 2011 [65]</td>
<td>Quantitative analysis of the consumption, recycling, recovery and disposal levels of packaging materials at different stages of the covenant to reduce total packaging volume</td>
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<td>Agreement on collection and recycling of batteries</td>
<td>Establish a battery collection and recycling scheme</td>
<td>Belgium</td>
<td>1997</td>
<td>De Clercq &amp; Ameels, 2002 [51]</td>
<td>Interviews and data analysis</td>
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<td>Finance</td>
<td>Financial Sector Charter</td>
<td>Improve access to financial services</td>
<td>South Africa</td>
<td>2002</td>
<td>Moyo &amp; Rohan, 2006 [37]</td>
<td>Secondary review of publicly available government and industry publications</td>
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<td>Environment</td>
<td>33/50 Program</td>
<td>Reduce industry use of toxic chemicals</td>
<td>United States</td>
<td>1991</td>
<td>Arora &amp; Cason, 1994 [25]</td>
<td>Quantitative analysis of likelihood of participation in the agreement, by various aspects of businesses (e.g. amount spent on advertising)</td>
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<tr>
<td></td>
<td>Agreement on the quality of gasoline</td>
<td>Improve the quality of petrol</td>
<td>Italy</td>
<td>1989</td>
<td>Vicini &amp; Wallace-Jones, 2002 [33]</td>
<td>Secondary review of internal industry documents</td>
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<td>Industry</td>
<td>Voluntary agreement name / identifier</td>
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<td>Country</td>
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<td>Agreements on the use of CFCs</td>
<td>Reduce the use of CFCs</td>
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<td>France</td>
<td>1989</td>
<td>Aggeri, 2002 [30]</td>
<td>Qualitative study, interviews with government representatives</td>
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<td>Clean Industry Program</td>
<td>Improve the environmental performance of industry</td>
<td></td>
<td>Mexico</td>
<td>1992</td>
<td>Blackman et al, 2010 [35]</td>
<td>Quantitative analysis (duration model and propensity score matching) of likelihood of participation in the agreement by various aspects of over 100,000 industry plants (e.g. size of plant), and impact on environmental performance</td>
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<tr>
<td>Cleaner Production Agreements</td>
<td>Improve the environmental performance of industry</td>
<td></td>
<td>Chile</td>
<td>1999</td>
<td>Jimenez, 2005 [41]</td>
<td>Propensity scores analysis on innovation as a result of participation in voluntary agreement, using data from cross-sectional survey of 322 businesses</td>
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<td>Jimenez, 2007 [55]</td>
<td>Propensity scores analysis of likelihood of participation in the agreement by various aspects of businesses (e.g. turnover), using data from cross-sectional survey of businesses</td>
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<tr>
<td>Climate Change Levy Agreements</td>
<td>Reduce energy consumption by industry</td>
<td></td>
<td>United Kingdom</td>
<td>2001</td>
<td>de Muizon &amp; Glachant, 2004 [45]</td>
<td>Scenario analysis of voluntary agreement</td>
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<td>Climate Leaders</td>
<td>Reduce greenhouse gas emissions by industry</td>
<td></td>
<td>United States</td>
<td>2002</td>
<td>Fisher-Vanden &amp; Thorburn, 2008 [75]</td>
<td>Economic analysis of shareholder wealth effects of 46 firms participating in the agreement</td>
</tr>
<tr>
<td>Energy efficiency agreement</td>
<td>Improve energy efficiency within the chemicals industry</td>
<td></td>
<td>United Kingdom</td>
<td>1997</td>
<td>Salmons, 2002 [26]</td>
<td>Policy analysis</td>
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<td>EPA pollution prevention voluntary agreements</td>
<td>Reduce industry use of toxic chemicals</td>
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<td>United States</td>
<td>1990</td>
<td>Sam, 2010 [38]</td>
<td>Statistical analysis using a two-way fixed effects Poisson model to investigate the impact of 43 EPA-sponsored pollution prevention practices on compliance and enforcement for a sample of facilities in the US manufacturing sector</td>
</tr>
<tr>
<td>Industry</td>
<td>Voluntary agreement name / identifier</td>
<td>Overall aim</td>
<td>Country</td>
<td>Start date</td>
<td>Reference</td>
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<td></td>
<td>Greenhouse Challenge</td>
<td>Reduce greenhouse gas emissions by industry</td>
<td>Australia</td>
<td>1995</td>
<td>Sullivan, 2005 [27]</td>
<td>Qualitative study using interviews with key stakeholders and analysis of parliamentary inquiry's evidence</td>
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<tr>
<td></td>
<td>Strategic Goals Program</td>
<td>Improve the environmental performance of industry</td>
<td>United States</td>
<td>1998</td>
<td>Brouhle et al, 2009 [64]</td>
<td>Regression analysis of 199 industry facilities on likelihood of participation agreement by various aspects of facilities (e.g. local population density), and impact of agreement on emissions</td>
</tr>
<tr>
<td></td>
<td>The Province of Vicenza negotiated agreements</td>
<td>Improve the environmental performance of industry</td>
<td>Italy</td>
<td>1997</td>
<td>Wallace-Jones, 2002 [32]</td>
<td>Qualitative study through stakeholder interviews</td>
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<td>Voluntary agreement on reducing automotive greenhouse gas emissions</td>
<td>Reduce greenhouse gas emissions from vehicles</td>
<td>Canada</td>
<td>2005</td>
<td>Lutsey &amp; Sperling, 2007 [49]</td>
<td>Modelling study on the effectiveness of the voluntary agreement, based on different scenarios (e.g. full compliance)</td>
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<td></td>
<td>Voluntary agreements on renewable energy</td>
<td>Increase the use of renewable energy</td>
<td>Netherlands</td>
<td>1990</td>
<td>van Rooijen &amp; van Wees, 2006</td>
<td>Analysis of policy decisions using the policy arrangement concept</td>
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<tr>
<td>Industry</td>
<td>Voluntary agreement name / identifier</td>
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<td>Country</td>
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<tr>
<td></td>
<td>green electricity</td>
<td></td>
<td></td>
<td></td>
<td>[59]</td>
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<td></td>
<td>Voluntary agreements on leather tannery pollution</td>
<td>Reduce pollution from leather tanneries</td>
<td>Mexico</td>
<td>1987</td>
<td>Blackman &amp; Sisto, 2006 [29]</td>
<td>Cross-sectional survey of 137 tanneries, interviews with key stakeholders and document analysis</td>
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<td></td>
<td></td>
<td>Johannsen, 2002 [63]</td>
<td>Two case studies, based on stakeholder interviews and document analysis</td>
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<td>Employment / workforce</td>
<td>Good Business Partnership program</td>
<td>Introduce a living wage for employees</td>
<td>United States</td>
<td>1999</td>
<td>Grant &amp; Trautner, 2004 [40]</td>
<td>Cross sectional survey of two sets of employers in the same community, with 59 responses (a group of contractors subject to an living wage ordinance and the other a group of businesses that voluntarily pledged to pay their workers a living wage)</td>
</tr>
<tr>
<td></td>
<td>Tripartite Agreement on a More Inclusive Working life (the IW Agreement)</td>
<td>Make workplaces more inclusive</td>
<td>Norway</td>
<td>2001</td>
<td>Midtsundstad, 2011 [31]</td>
<td>Cross-sectional survey of a representative sample of 456 companies, to assess voluntary policies to prevent the exclusion of older employees</td>
</tr>
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</table>
Table 2 – Country or region of voluntary agreement studied

<table>
<thead>
<tr>
<th>Country / Region</th>
<th>Number of studies</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Continental Europe</td>
<td>15</td>
<td>32</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td>United States &amp; Canada</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>100</td>
</tr>
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</table>

Table 3 – Start date of voluntary agreement studied

<table>
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<th>Start date of voluntary agreement</th>
<th>Number of studies</th>
<th>Percentage</th>
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<tr>
<td>1970-79</td>
<td>4</td>
<td>9%</td>
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<tr>
<td>1980-89</td>
<td>10</td>
<td>21%</td>
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<tr>
<td>1990-99</td>
<td>20</td>
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<td>2000-09</td>
<td>13</td>
<td>28%</td>
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<tr>
<td>Total</td>
<td>47</td>
<td>100%</td>
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</table>

Table 4 – Industry sector of voluntary agreement studied

<table>
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<tr>
<th>Industry sector</th>
<th>Number</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Environment (general)</td>
<td>24</td>
<td>51%</td>
</tr>
<tr>
<td>Tobacco</td>
<td>9</td>
<td>19%</td>
</tr>
<tr>
<td>Waste &amp; recycling</td>
<td>5</td>
<td>11%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td>Employment &amp; workforce</td>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td>Food</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Alcohol</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Pharmaceutical products</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Finance</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>100%</td>
</tr>
</tbody>
</table>