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ORIGINAL PAPER

Broadening sources of finance for health promotion and disease prevention: Smart capacitating investment

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Abstract

Background Smart Capacitating Investments (SCI) have been proposed as a means of mobilizing extra public and private investments in health promotion and disease prevention, but the concept needs clarification and development.

Aim To develop the concept SCI and explore available and emerging SCI models that could generate additional resources for health promotion and prevention.

Methods i) a rapid scoping review to explore existing examples of innovative investment in health promotion and disease prevention, ii) horizon scanning of recent/emerging examples of innovative investment models via expert interviews and web searches, and iii) a realist-informed synthesis of literature and interview-results to investigate investor motivations, barriers, and enablers for different forms of SCI.

Results We present a definition of SCI that stresses these unconventional investments are either financial or non-financial, that they are made by reallocating and pooling public funds within the health sector or by involving other non-health public sectors, private not-for-profit or for-profit social impact investors. SCI models aim to sustainably enhance individual and community capacity for healthier behaviors, or to address determinants of health. We describe the broad range and nature of SCI via a classification and typology of SCI models. Social Impact Bonds were found to be the most frequently applied model across all levels of prevention. For successful implementation of blended SCI models by public–private partnerships, significant government involvement was important.

Conclusion SCIs are diverse and novel, and they have potential to bring about change, particularly if backed by government to attract private capital and ensure rigorous evaluation.

Keywords Health promotion · Prevention · Financing · Investment · Public–private partnership · Social impact bond · Health technology assessment

Introduction

The contrasting scenarios of healthy versus unhealthy ageing in The European Commission's 2024 Ageing Report clearly demonstrate the long-term benefits of prevention, not only in improving future health and well-being but also in reducing costs and fostering economic growth [1]. Masters et al., reported a median return of 14 euros per euro spent on prevention projects [2]. However, the balance between spending on treatment and spending on prevention doesn't reflect thorough consideration of this potential return on investment. Although 48% of non-communicable disease burden is attributed to preventable environmental, occupational, metabolic, and behavioral risk factors [3],

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healthcare expenditure is almost exclusively addressing the consequences of these risk factors. Our record for reducing exposure to preventable harmful risks over the last three decades has been poor [4], and public expenditure on health promotion and disease prevention has been under downward pressure since the 2008 economic crisis. Even though the EU's average share of GDP spent on preventive healthcare spiked briefly from 0.38% in 2020 to 0.65% in 2021, primarily due to vaccine purchases during the COVID-19 crisis, expenditure on prevention remains low compared with treatment-focused healthcare expenditure [5]. In 12 EU member states, spending on preventive healthcare was less than 4% of total healthcare expenditure in 2022 [5].

The above figures pertain to healthcare sector spending. Population health, however, is largely determined by policies beyond the health sector such as actions to improve education and employment, economic development, living and residential environment, income, transport, and climate. The WHO refers to this as Health in All Policies (HiAP) [6]. HiAP is about integrated governance which promotes health and equity objectives and, at the same time, achieves mutual benefits for partnering sectors [7, 8]. As advocated by the OECD and the WHO council on the Economics of Health for All, it requires an integrated approach and reinforced co-ordination of effective public investments across multiple levels of government to address the main risk factors of health [9, 10].

The notion that improving health and well-being requires integrated cross-sectoral actions during the life course also underlies the "well-being and well-becoming wheel" of Edwards (2022), which summarizes personal, local, national and global factors that have an impact of well-being and well-becoming of individuals through the life course [11]. As many of the social determinants of health already cause inequalities in health and well-being in early life, even before birth, a life-course approach is necessary [6].

Although the need for health promotion and disease prevention and the imbalance in spending between treatment and prevention were identified a long time ago [12], shifting resources from treatment to prevention has proven to be difficult. In our hospital-centric health care systems, the immediate needs for curative care are commonly prioritized over prevention. This has multiple reasons, besides the immediacy of needs, including the extent to which prevention is seen as one's own responsibility, the longer time it takes for some preventive interventions to materialize into health benefits and/or cost savings [13, 14], and the greater difficulty in collecting unbiased empirical evidence of effectiveness [15]. The current healthcare spend on treatment is unlikely to change quickly, because there is an increasing demand for curative and long-term care due to ageing populations [1], a rising burden of non-communicable diseases, and emerging bio-technological innovations which offer new or more effective treatments. Initiatives to improve efficiency in the curative sector and de-implement (cost-) ineffective interventions have not led to a shift towards prevention [16]. Public budgets are unlikely to rise substantially, considering that government deficits are increasing due to the simultaneous geopolitical, cost-of living, and climate-related challenges plus the gradual reduction in tax revenues due to a decrease in the working-age population [1]. With the current low economic growth rates in the EU, fewer conventional public resources at any one of national, regional or local levels are available for prevention. Given the benefits that prevention offers, how can we then expand the funding dedicated to prevention?

One answer might be through '*Smart Capacitating Investment*' (SCI). The term SCI was first introduced in 2018 by the High-Level Task Force on Investing in Social Infrastructure in Europe, established by the European Association of Long-Term Investors (ELTI), directed primarily to the European Union institutions. The task force aimed to raise political awareness about the critical role of public and private investments in areas such as education and lifelong learning, health and long-term care, and affordable housing, all essential for fostering inclusive growth and improving well-being [17]. Building on the work of Hemerijck [18], the task force recommended mobilizing public resources and long-term sustainable private investments to strengthen Europe's social base. Acknowledging that national and sub-national public bodies lack the financial capacity to address existing gaps, they emphasized the need for greater involvement from private and institutional investors [17]. More recently, the WHO council on the Economics of Health for All also called for symbiotic public–private alliances to maximize public value, sharing both risks and rewards [10]. However, in 2022, only 6.7% of preventive healthcare expenditure (including providers of ambulatory healthcare) in the EU was funded by—what Eurostat calls—enterprise funding schemes [5]. Most of the spending came from traditional government schemes, which covered 65.6%, while compulsory contributory health insurance schemes accounted for 25.5% of the total [5]. To the best of our knowledge, figures on the contribution of other sectors to prevention are not available.

Recognizing the intersectoral nature of health impacts, i.e., beyond the influence of the healthcare sector as such, in our work we opted to focus on SCI initiatives directly aimed at improving health and/or wellbeing. Therefore, the objective of this paper is to clarify the concept of SCI in health promotion and disease prevention. We propose a classification and typology of different forms of SCI, present a heat map of their current use in prevention, and explore the incentives, barriers and enablers for novel investors such as private entities and social enterprises, to participate in SCI.

Methods

Defining the scope

This work was conducted as part of the Horizon Europe-funded Invest4Health project launched in 2023. The project focuses on developing alternative business models and their associated finance models—including new ways of value-creating, financing, governing, collaborating, and upscaling—in the context of health promotion and disease prevention, and testing these new model structures in regional test beds across Europe. To help define the scope of the Invest4Health project, we agreed on the mutual understanding of the terms shown in Table 1 and the prevention pyramid in Fig. 1.

Table 1 Terminology

Health promotion	Health promotion is the process of enabling people, individually and collectively, to increase control over the determinants of health and thereby improve their health [19]. It involves both strengthening individual skills and capabilities and addressing social, environmental, and economic health determinants
Prevention	As illustrated by the prevention pyramid in Fig. 1, disease prevention describes measures to reduce the occurrence of risk factors, prevent the occurrence of disease, to arrest its progress and reduce its consequences once established [19]. On the right-hand side of the figure, we listed examples of single interventions within and outside the health sector, while acknowledging that integrated, cross-sectoral prevention policies are most powerful
Investment	We defined an investment as an increase in a particular capital stock, often in terms of finances, but the stock can also exist of non-financial or intangible resources
Financing	Financing refers to the source of funds for investment and operations
Capacitating investment	The term capacitating investment has been associated with a paradigm shift in social welfare policy from the palliation of harm to the prevention of harm across the life-course [18, 20]. Capacitating refers to capacity building, empowerment, and the provision of services enabling people to make use of their capabilities to improve health. This links to the capability approach to human welfare of Sen emphasizing individuals' ability to achieve valuable life outcomes, focusing not just on resources or wealth, but on what people are actually able to do and be—their "capabilities" [21]
SMART	In management science, SMART goals are Specific, Measurable, Acceptable, Realistic, and Time-bound goals, in this case relevant to SCI objectives [22]. In Invest4Health, it also refers to innovative methods of raising sustainable funds for health promotion and prevention, transforming traditional funding approaches

Our development of the concept of SCI in the context of health promotion and prevention builds upon the work of the High-Level Task Force [17] and was informed by the results of the following methods: i) a rapid scoping review to explore existing examples of innovative investment in health promotion and disease prevention, ii) horizon scanning of recent and emerging examples of innovative investment models via expert interviews and web searches of social impact investors, and iii) a realist-informed synthesis of literature and interview results.

Rapid scoping review

The rapid scoping review was registered on the Open Science Framework in November 2023 [24], and the results were reported following the Preferred Reporting Items for Scoping Reviews 2018. [25] The approach we took aligned with Cochrane Rapid Review Methods Group methodological recommendations [26], tailored to suit the broad nature of the review topic and aim.

We conducted a database search of scientific literature in PubMed, EMBASE and ASSIA (Applied Social Sciences Index & Abstracts) for papers published between 01/01/2018 and 29/06/2023. Because we expected that a significant amount of information relevant to this review may be found in the grey literature, we searched on i) targeted websites (Supplement 1), ii) did a series of Google Advanced Searches, and (iii) consulted with content experts. Grey literature was defined using the 'Luxembourg definition' [27] and for the search we took inspiration from a published account of applying systematic review search methods to grey literature [28]. Due to the expected high volume of results, the Google Advanced Searches were restricted to the first 100 hits.

We defined four strands of search terms (Supplement 2) around i) Social Investment, ii) Type of Investors or Investments, iii) Collaboration, iv) Health Promotion and Disease Prevention. We combined these strands with Boolean operators into: (Strand 1 OR Strand 2 OR Strand 3) AND (Strand 4). Search filters related to studies involving only humans and articles published in the English language were applied where possible.

The inclusion criteria, arranged by the Population, Intervention, Comparison and Outcome (PICO) framework for systematic reviews [29] are given in Table 2.

All study titles and abstracts from PubMed, Embase and ASSIA were exported to Endnote X21 (Clarivate, Philadelphia, PA), de-duplicated, and split equally between three teams of reviewers for title and abstract screening. Grey literature searches were undertaken by members of a fourth review team.

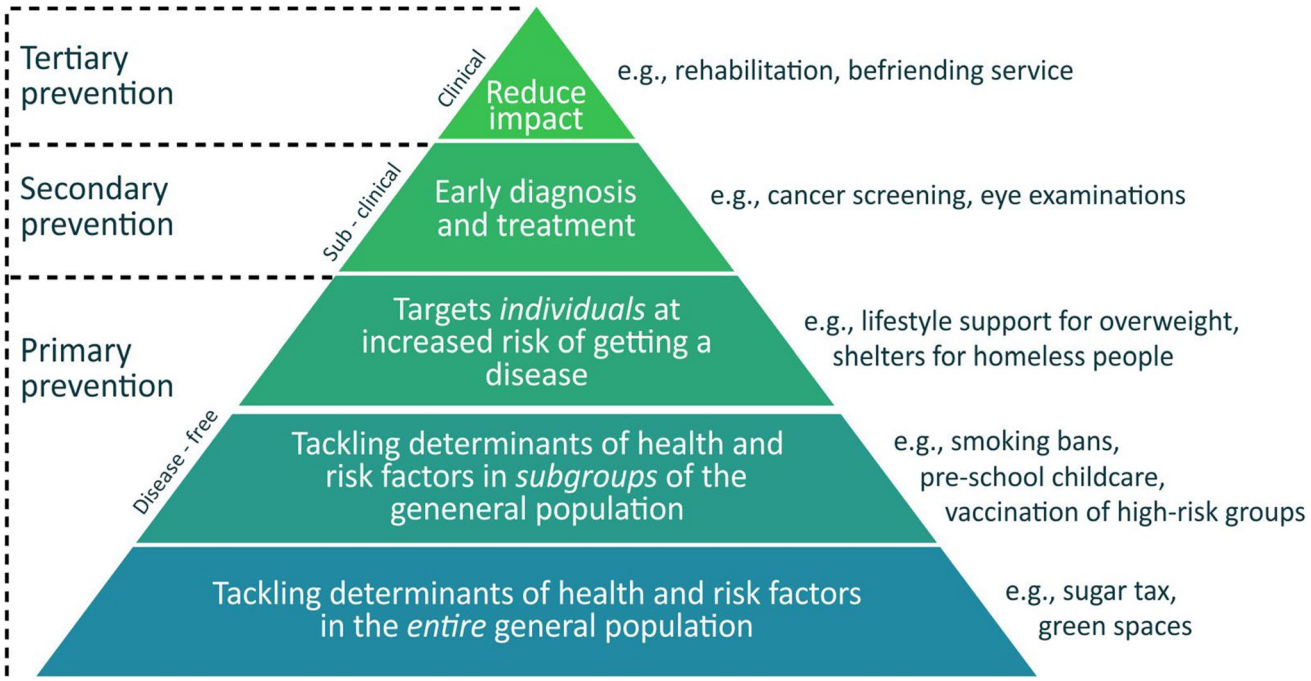

Fig. 1 The prevention pyramid (adapted from [23])

Table 2 Inclusion criteria of the scoping review

Population	All target populations were considered, irrespective of life course stage or characteristics
Intervention	Financial and/or non-financial investments irrespective of disease, condition, outcome, or sector, that actively support or contribute to health promotion and/or disease prevention, and i) involve at least one 'external investor' beyond the usual funders of public health, and ii) have a primary aim to improve individual, community, or population health and/or well-being
Comparator	Either the public-health intervention as funded in the usual way (which is mostly by public spending) or the absence of the public-health intervention in case the absence of funding prevented the intervention from being delivered. Note that included publications were not restricted to those that explicitly defined the comparator
Outcome	All and any intended or unintended health and well-being-related outcomes. Any intended or unintended broader societal and environmental outcomes of the included investments were captured in the data extraction stage alongside health and well-being outcomes
Setting	All settings and contexts, regardless of healthcare system and market or sector, were considered
Countries	EU and OECD countries. (note that 22 EU member states are also OECD members)
Language	English
Publication date	Scientific literature: publications from the last 5 years (2018 to 2023); Grey literature: publications from the last 10 years (2013 to 2023)
Sign-posts	Sign-posts that included too little information, were excluded

Following Cochrane Rapid Review Methods Group methodological recommendations, an initial 20% of the titles and abstracts for scientific literature and an equivalent of the title and abstract for the grey literature was double screened by two reviewers [26]. Thereafter, all review teams met to discuss results, identify any potential disagreement or inconsistency in the selection process, and refine the inclusion and exclusion criteria if required. During that meeting, six papers on which there was disagreement were discussed between all review team members to increase consistency. Because there was a strong consensus between the reviewers (inter-reviewer agreement was 99%, 98%, 96% for the pairs of reviewers, respectively), the remaining 80% of titles and abstracts were single screened. At the stage of full text screening, all papers were double screened.

A comprehensive Excel template with 72 data extraction variables was developed and piloted to ensure a high-level of consistency in extracting data between reviewers. The data extraction template is available on the Open Science Framework (https://osf.io/ksbue). For each intervention we recorded its location on the levels of the prevention pyramid, shown in Fig. 1 (multiple responses possible). The information that was extracted to describe funding of the intervention included commissioner or outcome payer, managing or intermediary organization, service provider, innovative 'external' investor, other investors, types of resources invested, financial or outcomes-based agreement, investment model, assets invested in, investment time scale, expected return on investment, barriers and facilitators to investment.

Descriptive statistics were used to analyze data collected in the data extraction table. A heat map was created of identified SCI models by level of the prevention pyramid and a narrative synthesis of the available evidence was performed to compare the characteristics of each model.

Horizon scanning via expert interviews and web searches

We interviewed 16 funding experts, including five representatives from public bodies, four investors, three consultants, and four researchers (Supplement 3). Interviewees were recruited by telephone and e-mail from a convenience sample of 68 potential contacts from 48 organizations. These organizations were identified through preliminary research on impact-driven finance models in health and included academic institutions, think-tanks, public and private investors, funders and policy makers. In a snowball approach, key experts recommended by previous interviewees were also contacted.

The interviews were semi-structured and addressed the following topics: stakeholders involved, resources invested, motivation for investment, investment models, timing and size of investment, outcome measurement, and scaling up. All interviews were recorded with the permission of the interviewees, except for one. Therefore, the analysis was carried out for 15 interviews. They were transcribed verbatim using the Buzz interface of the Whisper model and coded with an integrated approach of inductive and deductive elements, as suggested by Bradley et al. [30]. Summaries of coded text-chunks were organized into a matrix. This information was grouped and condensed into themes, organized according to the types of investment models mentioned in the interviews. The work resulted in a detailed description and a brief, condensed overview of these investment models.

We also studied the websites of large social impact investors that were identified during the literature search or mentioned during the interviews (Supplement 4), including the European Investment Bank, the European Investment Fund, European Fund for Strategic Investments, Big Society Capital, Big Issue Invest, national investment funds, social banks, and social departments of commercial banks to learn more about the financial product and contractual arrangements they provide.

Realist-informed synthesis of literature and interview evidence

We conducted a realist-informed synthesis of publications included in the rapid scoping review and data collected via expert interviews. We included all interview transcripts but only included publications that met the quality assessment 'richness' criterion [31] of a score of at least 2 out of 4 (with 1 being most rich, 4 being not rich). Realist synthesis of evidence can provide practical understanding of complex social interventions, including when, and why they might work best (i.e. what works for whom in what circumstances) [32]. Realist approaches typically explore variation in the implementation of a single program and elicit how and why it may be successful [33]. Here we drew on elements of the realist approach to provide initial practical insights into the selection and implementation of different SCI models. We explored the motivations (the 'why') of different stakeholders (the 'who') entering SCI models (the 'what') and the barriers and enablers influencing the successful implementation and scaling of SCI models (the 'how'), with the aim of providing useful information for practitioners and decision-makers looking to implement SCI in the future.

Included evidence sources were categorized and reviewed by investment model. Data regarding stakeholder motivations, implementation, scaling, and evaluation, where available, were extracted using a bespoke data extraction table (Supplement 5). The data extracted during this process was more detailed and narrative in nature compared to the initial data extraction performed for all publications included in the rapid scoping review.

Classification and typology of SCIs

Through thematic analysis of the results from the methods described above, we categorized the different types of SCI models and developed a draft typology for SCIs in health promotion and disease prevention that describes the domains and characteristics of SCI. We developed and refined this typology iteratively, drawing on discussions and the input from the wider Invest4Health consortium. Here we present our final classification of SCI models and a typology to better differentiate between the different types of SCIs. This typology is essentially a rubric to describe the different options within each domain of a SCI. Together with the classification, it can guide a systematic description of SCI and aid designers of investment methods in explicitly exploring available options.

Results

Definition of smart capacitating investment

Our collation, review and synthesis of relevant publication and expert interview evidence led us to develop the following definition of SCI in the context of health promotion and disease prevention.

Smart Capacitating Investment involves unconventional investments, financial or non-financial, in health promotion and disease prevention. These investments may consist of new resources or resources reallocated towards enhancing health promotion and disease prevention. All forms of SCI aim to enhance individual and community capacity for healthier behaviors, address health determinants, and promote sustainable change while reducing health inequalities.'

In the context of public funding, the term 'unconventional' used in the definition, refers to the reallocation, pooling or integration of existing or new public funds across different levels or sectors of government. 'Unconventional' also refers to investments made by social impact investors, philanthropists, and community-members. Investors in these domains will have a spectrum of motivations from profit-making to philanthropic.

The delivery of SCI often involves a cross-sectoral partnership between public, private, and third sector (i.e., voluntary sector) organizations that bond, bridge, connect and combine resources to pursue aligned interests and goals.

Rapid scoping review of SCI models

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart [34] of the scoping review is presented in Fig. 2. After removing duplicates, 13,991 studies (10,582 from the scientific literature and 3,408 studies from the grey literature search) were retained. Title and abstract screening resulted in 173 scientific papers and 497 grey literature documents eligible for full-text screening. After full-text screening, 40 academic papers and 37 grey literature documents met the inclusion criteria and were available for data extraction. The list of studies included can be found in Supplement 6.

Supplement 6 includes a table summarizing the main characteristics of all studies included. The greatest number of studies was from the United Kingdom (45%), followed by pan-European/pan-continental studies (12%) and studies from Australia (8%), Sweden, Denmark, France, and the United States (5% each). The lead sectors of the health promotion and prevention initiatives were healthcare (35%), social care (13%), employment (9%), education (7%), housing and construction (7%), sports, cultural and recreation (4%), environmental (4%), and occupational health (4%).

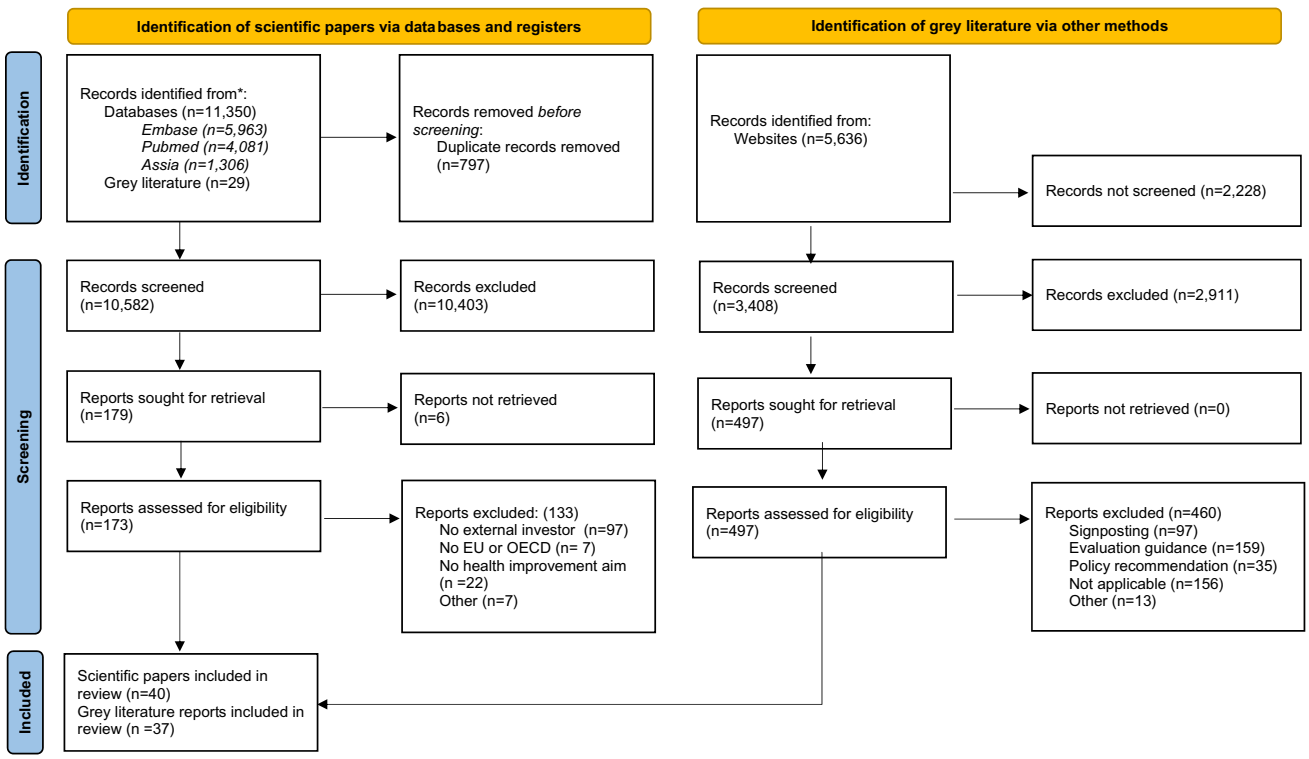

Fig. 2 PRISMA flow chart

Most initiatives were categorized as primary prevention tackling determinants of health and risk factors in subgroups of the general population (level 2 of the prevention pyramid in Fig. 1) (43%), followed by primary prevention targeting individuals at increased risk of getting a disease or well-being impairment (level 3 of the prevention pyramid) (34%). The most frequently mentioned goals they aimed to achieve were healthier behavior like increased physical activity, reduced substance (ab)use and healthier nutrition (44%), improvements in mental health and well-being (30%), social health (i.e. reduced loneliness and greater community engagement and participation) (11%), employment (5%), family well-being (4%), and accommodation (i.e. reduced homelessness) (3%) and child safety (3%).

Outcome measures and results were poorly reported, especially in studies that did not include an evaluation. Where reported, the most common outcome measures used to monitor initiatives included general quality of life and well-being-related outcomes, behavior-change-related outcomes (e.g., physical activity levels), and process outputs (e.g., number of participants, patient satisfaction)—mirroring the generic nature of the health and well-being goals targeted. Resource utilization outcomes such as reduced hospital admissions and clinical outcomes (e.g., HbA1c levels and blood pressure) were the least common type of outcomes cited.

The commissioners of the initiatives were mostly national (30%), regional (10%) or local governments (6%) or a national health service (12%) but in 21% of papers the commissioner was not clearly described. In 74% of the papers, the investors were disclosed, mostly including a partnership of multiple investors (21% of all papers), followed by national, regional or local governments (13%), social banks and other private-for-profit organizations (11%), charity organizations (10%), voluntary or community organizations (5%), and venture philanthropists (4%). Social Impact Bonds (SIBs) [35] stand out as the most frequently cited SCI model (30%), followed by pooled or repurposed public resources (13%), charity (14%), grants and subsidies (11%) and mobilization of community assets (8%).

Table 3 summarizes and compares some of the key characteristics of identified SCI models in the rapid scoping review.

Table 3 Narrative synthesis summary of investment model characteristics.

Figure 3 shows a heat map [36] of the frequency of identified SCI models in the scoping review by level of the prevention pyramid. The more often a particular SCI model was found to be cited in included publications, the darker the green color. While SCI models were present at all levels of the pyramid, the great majority was situated in primary prevention targeting individuals at risk of getting a disease. SIBs form the only model that was applied across all five levels of prevention. Pooling or re-purposing of public resources, and grants/subsidies were also found at all levels except tertiary prevention. Noteworthy is the substantial presence of the non-financial contributions (i.e., mobilizing community assets, time-banking and other in-kind contributions) to primary prevention in individuals with increased risks and secondary prevention.

Table 4 provides an example of an SCI at each level of the prevention pyramid, illustrating how SCIs frequently involve multiple investors collaborating in public–private partnerships with commissioners and service providers. Commissioners, often government entities from various levels, can also act as investors, pooling and repurposing budgets to fund place-based prevention initiatives. These initiatives typically have a medium-term duration of 7 to 10 years. More details of the different SCI models are given in the next two sections.

Table 4 An example of an SCI for each level of the prevention pyramid.

Expert interviews

Thirteen different types of financial investment models were discussed by the interviewees grouped into four categories: i) funding with no direct return on investment (RoI) for the investor (i.e., public money: treasury bonds/state bonds/low interest long-term internal financing, charitable investment), ii) funding with preferential RoI (i.e., SIBs, outcomes-based contracting, social banking, social financing/social impact investment, impact investment), iii) funding with non-preferential RoI (i.e., conventional market-based investment), and iv) models not explained in detail (e.g., microfinance, crowdfunding, community investment nodes). Social impact investment was somewhat ambiguously described in the interviews, but its main characteristics were that it is commonly small-scale, context-specific and generally places high emphasis on social outcomes (e.g., investment in social enterprises supporting a charity or a local community). In contrast with 'social impact investment', 'impact investment' was often used in a general sense by the interviewees as a term referring to more scalable, and, therefore, more financially attractive projects, where social impact is measurable, but the financial motivation of investors is also important (e.g., investment in innovative diagnostic technology for prevention purposes). A synthesis of the interview findings can be found in Supplement 7. These findings were combined with findings from the literature to inform the definition of SCI and to create the classification and typology of SCI.

Table 3 Narrative synthesis summary of investment model characteristics

Type of investment	RoI of interest to investors	SCI model/ Investment model	Geographical scale	Typical commissioners	Typical 'innovative' investors	Typical managing/intermediary body	Frequency of investment	Investment time horizon (years)
Financial	Financial + Social RoI	Social Outcome Contract (SOC)	Local to Regional	Government organisations	Social impact investors, Venture philanthropists	Social Finance organisations	One-time	1-to-20
		Social Impact Bond (SIB)	Local to Regional	Government organisations	Social impact investors	Social Finance organisations	One-time	3-to-5
		Loan-based impact investment	Local to National	Government organisations, Financial organisations	Financial organisations, Private companies	Commissioner is generally the managing body	One-time and continuous	3-to-20
		Direct investment of own resources	Organizational to National	Private-for-profit companies, Private-not-for-profit organisations	Private-for-profit companies, Private-not-for-profit organisations	Commissioner is generally the managing body/investor as investing own funds	One-time and continuous	Information not available
Non-financial	Social RoI	Venture philanthropy	Local to National	Government organisations	Venture philanthropists	Partnerships between commissioner and investor	One-time and continuous	3-to-8
		Charity support	Local to Regional	Government organisations, Charitable organisations	Charitable organisations	Partnerships between commissioner and investor	One-time and continuous	<1 to 10+ (generally ~ 1-to-3 years)
		Pooling/ re-purposing public funds	Local to National	Government organisations	Government organisations	Commissioner is generally the managing body	Continuous	1-to-30+ (generally ~ 5 years)
		Public grants/ subsidies	Local to Regional	Governmental/public bodies	Government organisations	Commissioner is generally the managing body	One-time	1-to-10 (generally ~ 3 years)
		Mobilisation of community assets	Local to Regional	Government organisations, Charitable organisations, Private-not-for-profit organisations	Community groups, Charitable organisations, Private-not-for profit organisations, Private-for-profit companies	Commissioner or service provider is generally the managing body	One-time and continuous	<1-to-5
		Other in-kind contributions	Local to International	Private-not-for-profit organisations (inc. Education sector)	Private-not-for-profit organisations	Private-not-for-profit organisations	One-time and continuous	2-to-6+

Fig. 3 Heat map of SCI model by level of the prevention pyramid. *Note: the higher the prevalence, the darker green*

SCI model\Pyramid level	Prim prev entire pop	Prim prev subgroups	Prim prev individuals	Secundary prev	Tertiary prev	Total
Social Impact Bond	1	6	20	6	2	35
Pooling or re-purposing public resources	4	5	4	2	0	15
Grants, subsidies	1	6	5	1	0	13
Charity	2	7	7	0	0	16
Mobilising community assets	0	1	3	5	0	9
Other in-kind contributions	1	3	2	1	0	7
Venture philanthropy	3	3	0	1	0	7
Social Outcomes Contract	0	1	3	0	1	5
Loan-based impact investment	0	2	3	0	0	5
Expenses from own resources/profits	0	5	0	0	0	5
Time banking	0	0	0	1	0	1
Total	12	39	47	17	3	118

Note: the higher the prevalence, the darker green

Table 4 An example of an SCI for each level of the prevention pyramid

	Primary prevention: whole population	Primary prevention: sub-population	Primary prevention: individuals	Secondary prevention	Tertiary prevention
Name initiative, country	Danish intersectoral partnership of the ABCs of mental health, Denmark	Chances, United Kingdom	Hémisphère social impact fund, France	Ways to Wellness, United Kingdom	Resolve, Australia
Investment model	Venture philanthropy, charity, pooling and repurposing public resources	SIB	SIB, bank-loan	SIB, mobilising community assets through social prescribing	SIB
Intervention	Campaign activities to promote mental health awareness and knowledge; Building capacity to work with mental health problems (e.g., by providing training and promoting intersectoral/interprofessional collaboration); Establishing and promoting opportunities to engage in mentally healthy activities (e.g., volunteer-led walking groups and community kitchens)	Offering opportunities to get active, engage with learning or do volunteer work for children and young people with specific issues like low school attendance, recent offenders, looked after children, NEETS, pre-NEETs, and young people with mental health problems	Purchase and renovate 62 hotels delivering shelter places and social support services for homeless people, refugees, and asylum seekers	Link workers connect adults 40–74 with chronic conditions (o.a., DM2), living in a multi-ethnic deprived area with volunteer and community services to improve health-related behaviours, self-care, condition self-management and social integration	Former inpatients living with severe mental health problems are offered residential services, outreach, and a 24-h telephone service for ongoing support as needed to reduce admissions
Commissioners	25 municipalities	Government Department for Culture, Media and Sport; Local Councils	French Ministry of Housing and Ministry of Home Affairs	Cabinet Office; Newcastle Gateshead CCG;	New South Wales Ministry of Health and Local Health Districts
External investors	NGO, unions, charity, sports clubs, volunteers, social service providers, cultural organisations	Big Issue Invest (Impact Investor) Life Chances Fund; UK (Govt social impact fund)	Seven Institutional Investors and Council of Europe Development Bank	Big Society Capital, The National Lottery Community Fund, Bridges Impact Foundation, Deutsche Bank, Esmee Fairbairn Foundation, European Investment Fund, European Fund for Strategic Investments	Flourish Australia plus private investors
Service providers	Danish Mental Health Foundation, Danish National Institute of Public Health, Healthy Cities Network, Danish Sports Association, Danish Scouts Association	Network of 16 locally trusted youth and sport organisations	Adoma, which is a social accommodation provider	Link workers and community/volunteer groups	Flourish Australia
Investment time scale	Continuous	3 years	11 years	7 years	7.5 years

Categorization of SCI models

To structure the possible SCI models for health promotion and disease prevention that we identified through the scoping review and the horizon scanning we created the classification in Fig. 4.

We first categorized the models by whether they are financial or non-financial investments and second by whether the investor aims for a combination of financial and social return RoI or mainly a social RoI.

Social impact investments are investments that aim to generate positive social RoI alongside a reasonable financial return. Investors are in it for the financial returns while also striving to have a positive social or environmental impact. These models were further categorized into models where (a proportion of) the return payments were tied to outcomes or not.

Models in which RoI depends on achieving certain social outcomes can be divided into *Social Outcome Contracts* (SOC's) and *Social Impact Bonds* (SIB's), more recently also called Social Outcomes Partnerships [37]. SOC's are outcome-based contracts that incorporate the use of private funding from investors to cover the upfront capital required for a provider to set up and deliver a service or social program [38]. The service or program is set out to achieve measurable outcomes established by the outcome payer, and the investor is repaid only if these outcomes are achieved [38]. Although the same definition can be used to describe SIBs

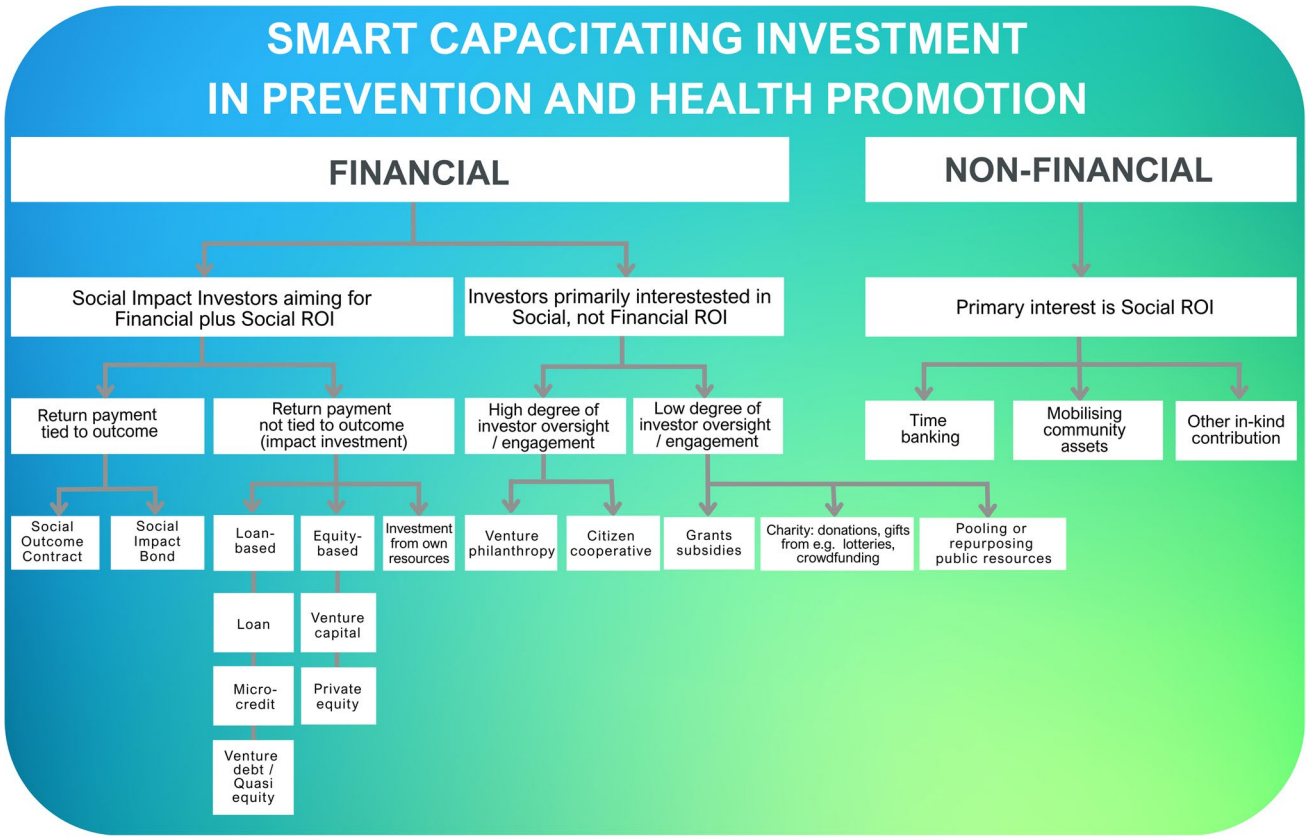

Fig. 4 Classification of SCI models

[39], others have made the following distinction between SOCs and SIBs: besides a commissioner (or outcome payer), an investor, a service provider, and beneficiaries—all four of which are involved in a SOC—a SIB also requires the involvement of an intermediary and an independent evaluator [40]. An intermediary usually has a twofold role. First, it can act as convener of all stakeholders involved in the service or social program in order to strike an agreement regarding the transaction process. Second, the intermediary can be responsible for raising capital and structuring the deal [40]. The independent evaluator assesses the impact and the agreed outcomes. SOCs and SIBs are risk-sharing agreements between the commissioner and the investor who would otherwise be unable to bear the risk. Interventions are (partly) pre-financed by social impact investors, and the participating public authorities pay back (a proportion of) the investment only if the contracted impact goals are achieved. SIBs are most often used to pilot-test innovative solutions for pressing social challenges, like unemployment, homelessness, or health-related issues. Once the solution becomes more mature, the SIB may turn into a SOC. Besides social impact investors, foundations, non-governmental organizations (NGOs), charities, private companies, and social banks are often involved in SOCs and SIBs [38].

In sum, because of the differences mentioned here, we made a distinction between SOCs and SIBs in Fig. 4, acknowledging that one could also argue that SIBs are a subset of the wider SOC concept.

Social impact investment models in which return-payments are not explicitly tied to outcomes include *loan-based* and *equity-based investments* as well as financial *investments from private companies' own resources* [41]. In the interviews these were sometimes just called impact investments. Although we did not find many examples of these in our scoping review, they were mentioned in the interviews in relation to BioTech, MedTech and other life sciences companies offering for example diagnostic tests, or devices for remote patient management, which can serve a prevention goal. In case of loans, the money lent must be paid back with interest and the interest rate reflects the credit risk profile of the initiative invested in. *Micro-credits* involve a very small loan typically given to an individual to help them become self-employed or grow a small business. The loan would be repaid over time as they bring in revenue. Considering cash-flow uncertainty and the high-risk associated with start-ups in the life sciences, equity-based models may be better able to bear risk than loan-based models.

Equity-based investments include venture capital and private equity. *Venture capital* is funding from wealthy investors (e.g., 'angel investors'), investment banks, and specialized venture capital funds to provide equity in the organization and, therefore, a voice in the organization's decisions. It is used to invest in startup companies and small businesses that have potential for high growth and to generate above-average returns [42]. In the context of prevention, one can think of companies developing equipment and devices for remote patient monitoring, and diagnostic assessments. *Private equity* investors are investors that buy private equity, which are shares representing ownership of, or an interest in, a company or other entity that is not publicly listed or traded [43]. They buy mostly mature companies that are already established and usually invest much larger sums of money than venture capitalists. Venture capitalists and private equity investors bring more than just financial capital, they can offer, for example, expertise, mentorship and networks to the companies they invest in. They exit by selling their investments in equity financing, for example, by holding initial public offerings (IPOs) or trade sale to another existing company. *Venture debt* (mezzanine or quasi-equity) is an investment model in between the loan-based and equity-based models. It is a loan to an early-stage company that provides liquidity to a business for the period between equity funding rounds [44]. The bulk of impact investing is done by institutional investors, including hedge funds, private foundations, banks, pension funds, and other fund managers.

Social impact investors that are primarily interested in social RoI include venture philanthropy and citizen cooperatives, which often involve a high degree of investor engagement, and grants and subsidies, charity donations and the reallocation, pooling or integration of public funds, which often involve a lower degree of investor oversight and engagement. *Venture philanthropy* is an umbrella term that can be used to refer to many kinds of philanthropic investing often by private foundations owned or supported by wealthy ("High Net Worth") individuals or philanthropic investing arms of major investing institutions. A *citizen cooperative* is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise [45]. They can invest a proportion of their trading profits back into their communities to achieve social goals. A *grant* is funding won through a (competitive) grant application process. Spent funds don't have to be paid back but the funder usually takes back any unspent funds by the end of the agreed activity (e.g., project). Progress-reporting is usually required. A *subsidy* is a benefit given to an individual, business, or institution, usually by the government. It can be direct (such as cash payments) or indirect (such as tax cuts). A *charitable donation* is a gift of cash or property made to a nonprofit organization to help it accomplish its goals, for which the donor receives nothing in return. In many countries, donations can be deducted from the tax returns of individuals and companies making them, provided that the recipient charity is a qualified organization. Most *crowd funding* initiatives are also charity, but there are also forms of crowd funding that do involve financial or equity returns [46]. *Pooling or repurposing public funding* is the term we used for conventional public funding sources from government authorities that are pooled across sectors or used in a way that is innovative in a particular context.

The non-financial investment models include mobilizing **community assets** (e.g., through social prescribing [47]), time banking and other in-kind contributions like time, expertise, infrastructure, equipment, software, data, and network. Time banking is a model in which people are paid in time to volunteer to support members of their community, which they can then use to buy support for themselves, functioning as a mutual aid network [48]. Each hour can either be spent or banked for future need.

Typology of SCI

The typology describes SCIs in terms of 30 dimensions grouped into 7 categories (Table 5), including i) the scope of the SCI, ii) the partnership, iii) the investment contract, iv) the outcomes of the SCI, v) the risk for the investor, vi) the feasibility of the SCI, and vii) the scalability of the SCI. Within each category, there are a range of dimensions to help describe the nature of an SCI and allow SCIs to be systematically compared. When using the typology, dimensions within and across different categories are not dependent or connected and each SCI descriptor should be read individually.

Table 5 Typology of Smart Capacitating Investment

Realist-informed synthesis

Forty-five publications, which met the threshold score on the richness criterion, and 15 expert interviews were included in the realist-informed synthesis. The greatest body of evidence was available for SIB's (20 publications; 9 expert interview responses) followed by venture philanthropy and charity (18; 3), loan-based impact investment (2;1), equity-based impact investment (0;7), SOC's (4;1), investing own resources (3;0), pooling public funds (1;3) and non-financial investments (9;0).

Key statements about stakeholder motivations, barriers and enabler to implementation, scaling, and evaluation were constructed based on available synthesized evidence. The main learning from these statements and their supporting evidence sources are presented below.

Table 5 Typology of Smart Capacitating Investment

Scope of the SCI	**Dimensions**		
Prevention pyramid	Primary prevention (level 1, 2 or 3 of the prevention pyramid)	Secondary prevention (level 4 of the prevention pyramid)	Tertiary prevention (level 5 of the prevention pyramid)
Target population	Entire general population, subgroup of the general population, or individuals at increased risk of getting a disease or facing a well-being-threat	Undiagnosed individuals with latent disease or well-being-problem	Individuals with a disease or well-being-problem (e.g. homelessness, domestic violence, addiction)
Service-delivery sector	Public health sector with or without Education, Housing/Construction, Transportation, Sport and Recreation, Environmental, Justice, Retailer/Wholesaler, Employment, Financial sector	Healthcare sector with or without Social Care sector	Healthcare sector with or without Social Care sector and Community sector
Commercial intention	Basic material needs, Food, Housing, Education, Jobs, Green space, Sport and recreational facilities, Legal support, Financial Support	Lifestyle interventions	Pro-active physical or mental health services
Time frame of project	Short-term: up to 3 years	Medium-term: 3–10 years	Permanent
Maturity of project	Early initiative with some evidence of effectiveness, high growth potential but unpredictable chances of success	Project with good evidence of effectiveness and successful local implementation	Mature and established project being scaled-up
In line with environmental sustainability goals	Yes, this is one of the goals	Neutral/not considered	No, not in line
Commercial intention	Non-commercial	Hybrid (mix of commercial and non-commercial)	Commercial
Partnership	**Dimensions**		
Roles involved	Commissioner, Investor, Service provider, Beneficiaries	Previous category plus intermediary/governing body	Previous category plus independent outcome evaluator
Type of partners	National, regional or local public authorities	Public authorities plus private commercial partners	Public authorities plus private commercial and private non-commercial partners
Investors	Social or commercial bank, venture capitalist, private or institutional impact investor, European or national investment fund, pension fund, local business, employer, housing company, transport companies	Public authority, Venture Philanthropist, Foundation, Trust, National Heritage Fund, Cooperative or Mutual Fund	Charity organization, Lottery, Sports or recreational club or association, School, Wealthy individual
Number of partners	Up to 3	Between 4 and 8	More than 8
Investment contract	**Dimensions**		
Type of contribution	Financial	Financial and non-financial (expertise, time, infrastructure, equipment, software, data, network)	Non-financial
Size financial investment	Up to 1 million	Up to 10 million	More than 10 million
Repayment period	Within 3 years	Up to 10 years	Up to 30 years
Motivation/Return on investment (RoI)	Social RoI + Financial RoI above rate of government treasury bond	Social RoI + Financial RoI same as government treasury bond	Only Social RoI
Type of financial RoI	Dividend, equity	Interest, Royalties	Tax credit or other financial benefits
Return payment tied to non-financial outcome	Entirely tied to outcome	Only a proportion is tied to outcome	Not tied to outcome
Return payment tied to savings in health or social care costs	Entirely tied to cost savings	Partly tied cost savings	Not tied to cost savings
Degree of investor oversight and engagement	Low: no direct involvement in daily management	Medium: Voting right, ownership is dispersed	High: donors sit on boards of organizations and have intimate involvement in operations or management
Investment models from flow diagram	Impact investment	Social Outcomes Contract, Social Impact Bond, Outcomes-based contracting	Grants, Subsidies, Philanthropy, Charity, Non-financial investments
Outcomes	**Dimensions**		

Table 5 (continued)

Non-financial outcome metric	Structure (e.g., milestone for having a structural change in place)	Process (e.g., engagement outcomes)	Final health or societal outcome (e.g., QoL, % returning to work)
Outcome measurement	Independent by external evaluator	By service provider	Outcomes not measured
Provider-payment linked to outcome	Entirely tied to outcome	Only a proportion is tied to outcome	Not tied to outcome
Risk profile	**Dimensions**		
Expected financial risk and credit rating	High risk, low credit rating	Moderate risk, moderate credit rating	Low risk, high credit rating
Expected risk associated with reaching outcomes or cost savings	High	Medium	Low
% of risk funding tied to outcomes/impact	0%	10 to 30%	Over 30%
Feasibility	**Dimensions**		
Complexity and transaction costs	Complex; high transaction costs over 10% of intervention costs	Medium complexity; transaction costs 5 to 10% of intervention costs	Low complexity; transaction costs lower than 5% of intervention costs
Competence	Provider possess competences required to execute the investment contract	Necessary competences force provider to hire a limited number of new staff members	Necessary competences force provider to subcontract certain tasks resulting from the investment model
Scalability	**Dimensions**		
Transferability	Repeatable in comparable settings	Repeatable + Scalable in comparable settings	Repeatable + Scalable + Transferable to other settings

Investors motivation

Commissioners of Social Impact Initiatives (SCIs) are typically government entities motivated by policy goals rather than financial gain [49–60]. Governments often act as both commissioner and investor [59, 61, 62], repurposing resources creatively to drive social innovation [53, 60, 63, 64]. They are also financially motivated by potential long-term public cost savings [65, 66]. For funding, governments may involve private investors via SOC's, SIB's, loans, or venture philanthropy to secure upfront capital and leverage private-sector expertise [51, 67–69]. SIBs, involving multiple stakeholders, allow risk-sharing and are favorable for testing social innovation without full reliance on public funds [70].

Private investors in SOCs, SIBs, and equity-based models seek both social and financial returns. SOCs, simpler than SIBs, are more common and can offer higher returns [38]. Investors may use SIBs to pilot scalable projects with future profit potential; tax incentives may further enhance their appeal [67, 71]. Some large investors like the European Investment Fund are motivated by goals of innovation, job creation, and market support rather than financial gain, but may typically want at least a return of the principal, if not of interest payments. Private sector organizations invest their own resources to improve staff and customer well-being while hoping to enhance profit margins, driven by both financial and social motivations [72–75].

Philanthropists and charitable investors prioritize social impact over financial returns, supporting projects that align with their values. Regulations like the Corporate Sustainability Reporting Directive (CSRD) [76] encourage venture philanthropists to pursue sustainable social change.

Barriers

Multi-sector collaboration can be weakened if contributions are unequally valued or if one partner controls key resources [50]. In national programs, managing diverse stakeholder expectations and ensuring consistent service delivery can be challenging due to local variations [53, 55]. At a regional level, lack of trust or understanding of local needs can hinder effective outcomes [55, 60, 73]. Issues like the "wrong pocket problem," conflicting public interests, and reduced government control when sharing resources with other sectors can impede innovative public investments [53, 64].

High 'transaction costs' could be perceived as the biggest single barrier to the wider development and dissemination of SOCs and SIBs. These models require extensive data collection, which can be resource-intensive, especially for inexperienced stakeholders, and the contracts are often bespoke and detailed [69]. Overly complex outcome measures, the lack of a standardized outcomes framework and uncertainty about the counterfactual baseline can hinder SIBs from effectively achieving targeted social outcomes [71, 77–82]. SIBs, typically only lasting three years, may not achieve

full social outcomes due to project complexity and limited timeframes, leading to stakeholder disagreements [52, 69, 71, 81, 83]. According to one of the interviewees, impact investors often prefer environmental projects with strong scientific backing over socially focused ventures with less evidential support.

Enablers

Addressing societal health and well-being challenges inevitably requires long-term investment, as it better supports meaningful and sustainable social change than short-term efforts [60]. Establishing shared missions and collective impact frameworks is critical for cross-sector partnerships [56], with missions needing to balance flexibility for diverse stakeholder buy-in [50] and specificity for actionable direction [50]. Effective stakeholder engagement, collaboration, and coordination from a project's inception enhance outcomes, reduce conflicts, and support sustainability, especially in multi-stakeholder models [38, 50, 51, 84]. A bottom-up, stakeholder-led approach helps align initiatives with societal needs, while regular monitoring fosters collaboration and accountability [53, 55, 60, 62, 63].

Evidence from pilot studies or evaluations boosts stakeholder confidence and investment willingness [51, 58, 61, 85]. Political understanding and securing buy-in are vital for successful implementation. In SIBs, intermediaries play a key role where stakeholders lack expertise in areas like finance or evaluation [71, 80]. Target outcomes in SIBs must balance ambition and achievability, often combining structural, process, and final outcomes [67, 71, 77, 78, 86, 87]. Support from EU bodies (EIB, EIF, ESF, EIC, European Commission, etc.) can de-risk projects and promote social innovation. Lastly, leveraging strong community relationships and assets enhances engagement and intervention success [88, 89].

Discussion

Justification of adopted approach

Our Invest4Health project is based on the notion that a paradigm shift towards prevention necessitates viewing it as an investment — a short-term expense that may yield substantial future returns — instead of just as a cost center. However, the challenge lies in the lack of resources traditionally being made available for prevention. Therefore, one of the aims of the Invest4Health project is to explore SCI models as a solution to generate new resources for prevention. This requires establishing a shared understanding of SCI, a concept that is sometimes implicit in prevention initiatives funded in an innovative way but not explicitly labeled as such. It is therefore why we opted for a scoping review of both scientific and grey literature, supplemented by expert interviews and web searches, as the most suitable approach to breathe systematic life into the concept of SCI.

Public–private partnerships and blended SCI models

In the scoping review, we found few loan-based and even fewer equity-based impact investments in prevention, likely due to the long-term commitment required for prevention projects to become financially viable. Regular banks, institutional investors, private investors, venture capitalists, and private equity firms that are primarily seeking financial returns on investment are cautious with investing in prevention measures with uncertain financial outcomes. This is in very large part because they may not be able to capture the often-intangible social- or health-benefit stream. Where they are involved in the prevention sector, it often involves investments in infrastructure and high-tech, providing sources of finance with collateral [90], but where there are no fixed assets, this route is not available. Alternative approaches could involve securing parties willing to take on "first-loss risk." This would separate project risk — potentially absorbed by philanthropists or foundations prepared to incur losses if the project underperforms — from the operational side, which could be funded by commercial investors seeking a de-risked investment in exchange for modest returns. New business cases for private investment in prevention need to be explored with mitigation measures for potential downsides such as quick wins from lowering the quality or increasing overconsumption or prices of services [90].

We found more examples of involvement from social banks or social departments of regular commercial banks, and private and institutional social impact investors, especially when return-payments were clearly depending on the achievement of predetermined outcomes in SIBs and SOCs. We observed that health promotion and disease prevention initiatives funded by these types of models generally had a clearer focus and were more ambitious regarding their impact, which apparently reassured social impact investors enough to take the risk.

Although we were looking for prevention measures funded or co-funded by unconventional investors, the significant involvement of governments in SCI models is noteworthy. In SIBs, the most frequent SCI model, governments often act as both commissioner and co-investor. In their role of co-investor, governments often repurposed their funding or pooled funding across different levels of government or sectors to support a particular prevention initiative. This

highlights the critical role of government in driving public–private partnerships of all kinds. Especially in large public–private partnerships that fund cross-sectoral collaborations to address root causes of ill health—such as limited education, unemployment, inadequate housing, and lack of access to social, financial, and legal services—it is essential for different levels of government and public bodies to take the lead and join forces with shared goals. The involvement of the public sector in the form of governmental co-investment appears to be a key factor in attracting private capital from risk-averse investors. Additionally, financial involvement from EU organizations, such as the European Investment Bank (EIB) or other socially oriented international financing institutions such as the Council of Europe Development Bank, further provides confidence to investors considering entering a SIB. Although the EIB usually does not provide any bank-guarantees themselves, the very presence of the EIB can provide reassurance to other investors in a SIB.

Despite their potential, SIBs are relatively complex models [91]. They involve an intermediary governing body and an independent outcome assessor, which can result in high transaction costs and the need for advanced competencies to write, and then oversee, the contracts. Consequently, SIBs may be more suitable for piloting innovative prevention initiatives rather than for routine funding. An example of an initiative that started as a SIB but transitioned to being funded as a SOCs as it matured can be found in reference [69]. A move to more standardized contracts would help. Public authorities serious about the use of instruments like SIBs might consider establishing centralized expertise or advice centers, to avoid the need to reinvent the wheel each time.

In SIBs, (part of) the financial return-payments on investments are tied to achieving specific outcomes. This requires a clearly identified target population in which outcomes can be measured. Notably, there needs to be a measurable and plausible counterfactual, so that the post-intervention case can be robustly compared with the non-intervention one. All of this might be more difficult for primary prevention initiatives that target the entire population, and therefore, the bottom level of the prevention pyramid (primary prevention targeted at entire populations) does not seem likely to fall appropriately within the scope of SIBs.

We found that different types of SCI models were often applied simultaneously to support especially the larger scale regional and local prevention initiatives. In these blended SCI models, philanthropic and charitable contributions (e.g., from lotteries) and contributions from local businesses can be substantial, alongside the valuable non-financial contributions of community members. Several of these non-financial contributions employed social prescribing as a means to connect people with social care needs to a wide range of voluntary community resources, such as financial-administrative support, recreational activities, transportation, and legal counselling. For successful deployment of these blended SCI models, they should be integrated in a business model with an effective and efficient governing model, but the papers included in the scoping review generally provided little details about this.

The number of examples in which employers or health insurers were involved in these blended SCI models was limited. One of the reasons might be again the "wrong pocket" problem of benefits of prevention not falling to those that make the initial investment. By the time that the benefits of (occupational) prevention measures become visible, employees may have changed jobs or people may have changed insurance company. Obviously, that is less of an issue in a tax-funded national public health care or social insurance system, but it could potentially be solved by shared-savings models in other systems.

Improved fiscal climate for strengthening the leading role of government

Recognizing the importance of governments' leading role in health promotion and disease prevention, tax measures and the large contributions to population health from non-health sectors like social security, education, employment, housing, environment and transport, the reasons for lagging investments in prevention by the government need to be addressed. In many EU countries, government funding for prevention is fragmented and divided across multiple levels, sources or programs. Especially at regional and local government level, budgets are often not specifically earmarked for prevention efforts [92]. As a result, a separate budget must be negotiated for each preventive measure individually. Often, this is only successful when the measure is budget-neutral and pays for itself, perhaps even in the short-term. Finance ministries or treasuries can be skeptical of the realism of hypothesized future health gains or their value, and it is worth stating that even a guarantee is a contingent liability on the state's balance sheet irrespective of whether it is ever called. This way, investment decisions in prevention depend too much on budget impact rather than cost–benefit considerations. The prevention budget thus depends too much on the financial leeway and political priorities of regional governments and municipalities which will have many competing focus areas [92].

We argue that national governments should instead define clear prevention goals, which would force them actively to seek resources to achieve them. In an ideal or even a better world, at all levels of government, budgets should specifically be earmarked for prevention, and national governments should stimulate combining funds from different levels of

government. We have seen some interesting examples of the latter in our review [57, 63, 93].

At European level, the climate for investing in prevention has momentum [94]. The EU's New Economic Governance Framework (NEGF), that came into force on April 30th 2024, recognizes that strategic investments in prevention are not only fundamental to the promotion of good health but also to economic and social growth and resilience of societies. Because impaired health leads to absence from work, declined productivity, reduced income, early exit from the labor market, and increased dependence on social security, investing in prevention means not only dampening demand and associated costs for health and social care services but also promoting the country's economic growth [95–97]. Therefore, the NEGF allows investments in prevention (in particular immunization) to be considered as "social security investments", just as has been done for investments in defense and digital and green transitions [94]. In this sense, investment in prevention can be excluded from the calculations of EU Member States' deficit and public debt levels, which are not allowed to exceed 3% and 60% of the Gross Domestic Product, respectively.

Evidence on the full value of health gains

Although the availability of evidence regarding the effectiveness of an initiative, such as a pilot study or published evaluations, can increase investors' willingness to invest, we found a lack of detail on outcome measurement in models other than SOCs or SIBs. Although this might be due to our search strategy which focused on the identification of literature on investment models, it is quite in line with other authors reporting that a lack of evidence in financial decision-making might harm the development and implementation of potentially value-enhancing innovations [98]. We acknowledge that it is more challenging to set up randomized studies in prevention than in the evaluation of new medicines or specific health services, for example because the effects of prevention may extend beyond the study's timeframe. Also, in contrast to medicines, where research is funded by manufacturers, there is no commercial party with a vested interest in investing in research for preventive measures.

For SOCs and SIBs, interviewees emphasized the importance of linking return on investment payment to a combination of short-term, medium-term, and long-term outcome metrics in a smart way to create the desired incentives. Short-term *output* metrics, such as the number of people enrolled, stimulate engagement in the prevention initiative. Medium-term metrics, like the proportion of people starting employment, are closer to desired *outcomes*, and incentivize continuous commitment. Long-term metrics like improved health or well-being, total cost savings, or the proportion of people with permanent employment contracts may be the final outcome goal. However, a clear concern in the literature is that SIBs are susceptible to the gaming of outcomes, a concern often discussed in the pay-for-performance literature [99].

Despite the use of explicit metrics on health outcomes and cost savings in some contracts, there was virtually no mention of cost-effectiveness in the papers included in the review, maybe because that does not drive investment decisions of private investors and venture philanthropy. However, from a public perspective, we should map out all incremental costs and benefits of prevention over a lifetime, regardless of which sector or stakeholder incurs them, just as we do in health technology assessment (HTA) of medicines. Despite some good examples of comprehensive cost–benefit analyses [100], it seems that in prevention, the full value of improved health is not always considered [101]. If prevention leads to better health and subsequently a longer life, it may result in higher total healthcare costs over a person's lifetime; but then, the value of that extended life in all its dimensions should also be considered [101]. It is a national government's responsibility to ensure that budget allocation to prevention measures is guided by cost–benefit analysis rather than disaggregated cash budget impacts. This would also contribute to addressing the wrong pocket problem. But in most countries, there currently is no such comprehensive decision-making framework for prevention.

Limitations of the study

Despite the broad scoping review of scientific and grey literature complemented with expert interviews and targeted websites searches, it is likely that some models, which could be described as SCI, were not identified in our rapid scoping review. Our search terms may have overlooked SCIs only funded through the pooling or repurposing of public resources, because we focused on finding models involving external investors from beyond the usual public health funders, potentially from non-health sectors. Concerning the non-health sectors, we found several examples of the involvement of social security, employment, education, housing and transport sector in public–private partnerships. Noteworthy are several initiatives that invested in green spaces with the explicit aim of improving health. These included investments in expanding nature, such as the Future Parks Accelerator [60] and the Mersey Forest (2022–2027) [60], as well as investments in improving access to green spaces, exemplified by the Scottish Green Health Partnership [89].

Our inclusion criterion that the non-health sector initiatives should explicitly mention the aim to improve individual, community, or population health and/or well-being, might have

excluded many non-health sector initiatives that indirectly affect health. This inclusion criterion was necessary, however, to keep the number of publications feasible. That is also the reason for our focus on OECD countries, thus leaving out initiatives in other parts of the world. We also had a considerable number of documents that served as 'signposting', which spoke to the wider 'discussions' taking place around innovative financing, but didn't always include sufficiently detailed case studies of innovative financing in practice.

As always, publication bias is a concern, as investments without government involvement are less likely to be evaluated and publicly disclosed, or indeed unsuccessful ones. To mitigate this limitation, we complemented the literature search with interviews and targeted website reviews to identify as many potential SCI models as possible. Nevertheless, the overall picture is that detailed reporting on the specifics of innovative investment models for health promotion and disease prevention in the current literature is lacking across many important domains [102, 103]. This is likely to be related to the confidential nature of the contracts and conditions between the investor and the commissioner, which makes it difficult for new initiatives to learn from previous experience. The classification and typology of SCI models that we have presented in this paper might be helpful for filling this gap in future papers, allowing better comparative analysis of different SCI models.

Conclusion

In this paper we have presented an approach to defining Smart Capacitating Investment in a way that is practical and can be replicated by other researchers. We have attempted to define SCI in the context of health promotion and prevention and describe the broad range and nature of SCI via a classification and a typology, based on the 'prevention pyramid' as an exemplar of the scope for interventions. At present, many SCI models are pilots and high transaction costs mean that scalability and replicability are issues. However, SCI does show promise to marshal new public and private investment into underserved sectors. Rigorous evaluation will be critical to expand the scope.

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Declarations

Competing interests The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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