Beira-mar:
ponto crítico entre a saúde dos oceanos e dos humanos

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FCT Fundação para a Ciência e a Tecnologia
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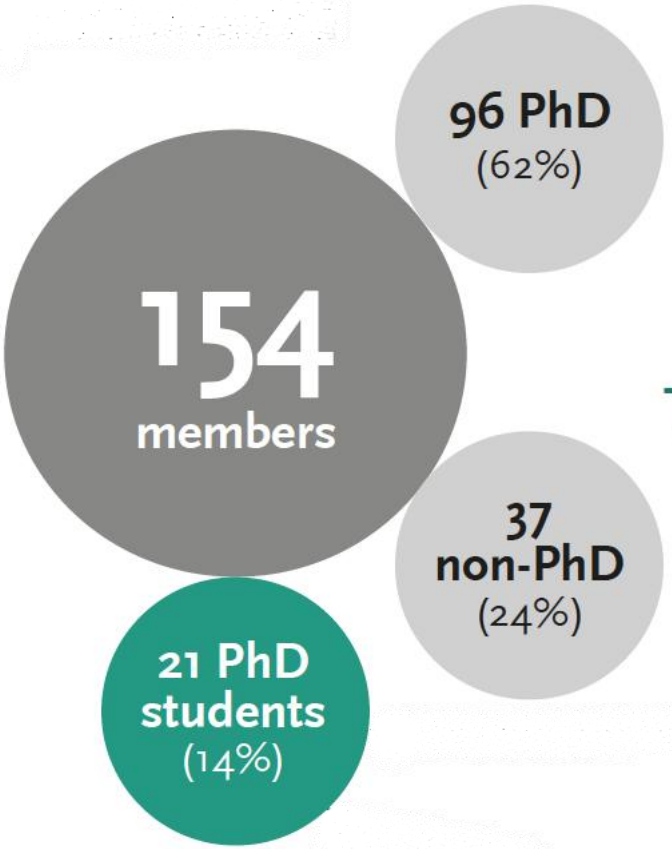
Unidade de I&D financiada

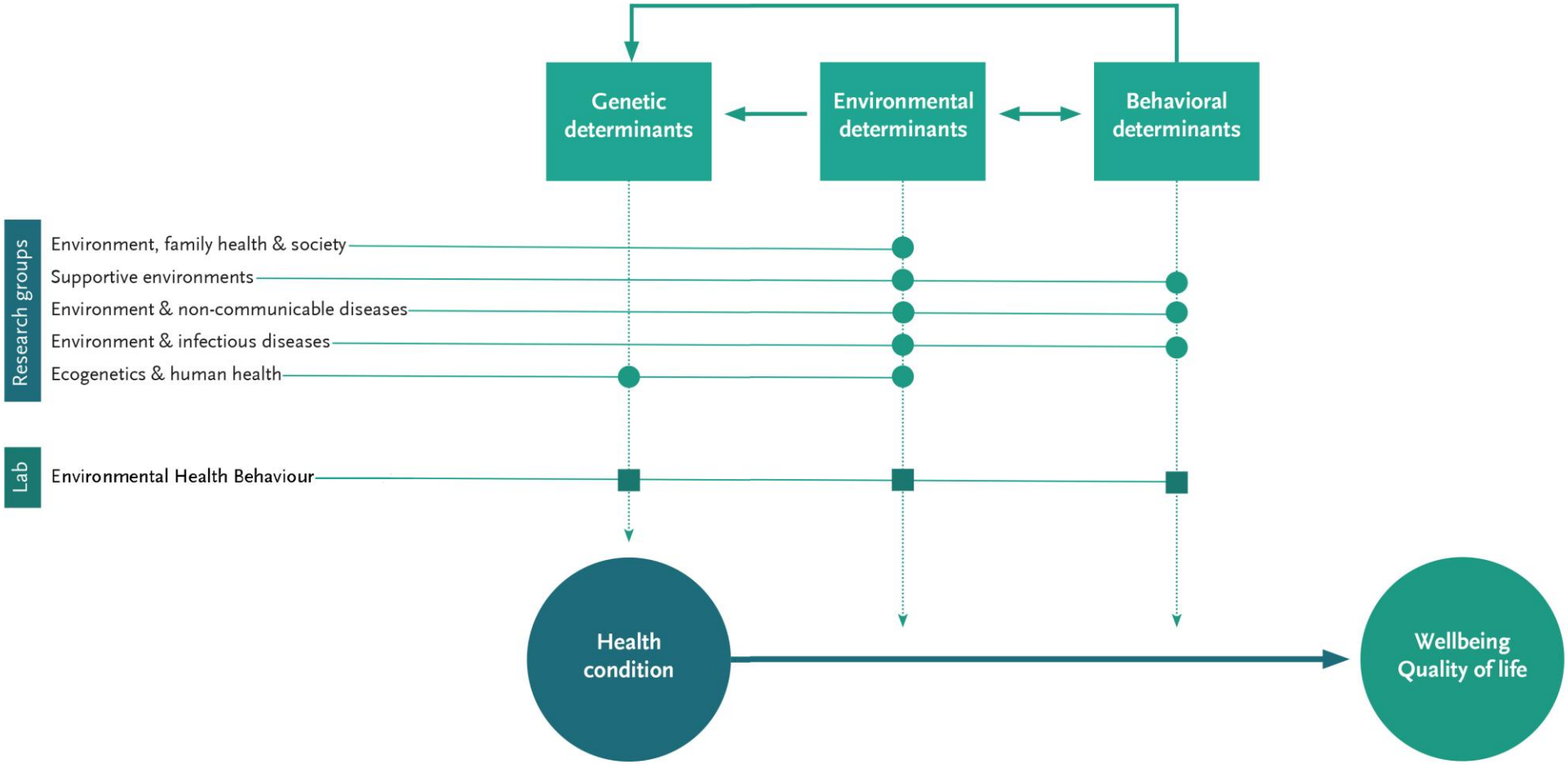
membros



multidisciplinary team

Epidemiology
Psychology Nutrition Biology
Nursing Geography
Architecture Genetics Pharmacy
Toxicology Biochemistry Philosophy
Sociology Medicine
Ethics Public health Veterinary

investigação



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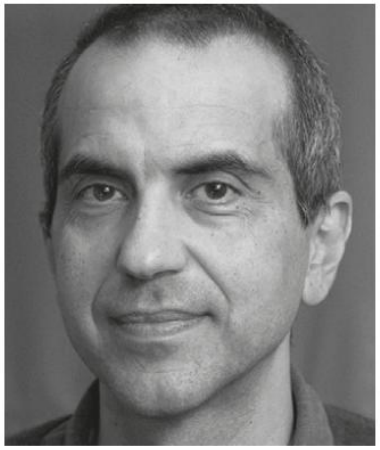

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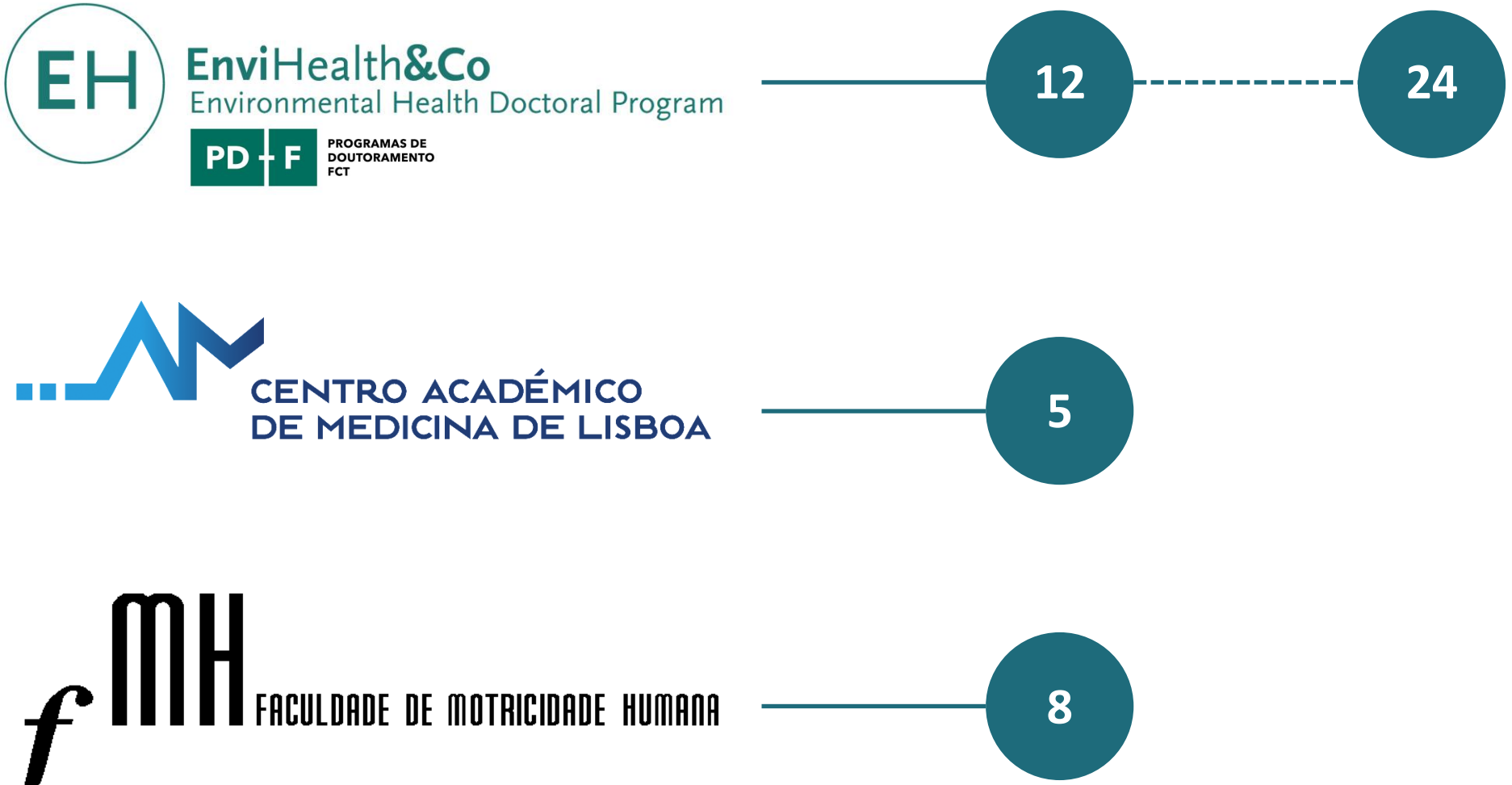
doutorandos



Saúde Ambiental

saúde ambiental

Environmental Health: An overview on the Evolution of the Concept and its Definitions

O Santos, A Virgolino, RR Santos, J Costa, A Rodrigues, and A Vaz-Carneiro, University of Lisbon, Lisbon, Portugal

Introduction

During the last decades, especially from the 1970s onwards, a relevant amount of evidence about the impact of environmental factors on human health has been produced. The main concern with regard to the interplay between environment and human health has been the exposure to chemical, biological and physical factors in soil, water and air. Less frequently, environmental health (EH) professionals, researchers and relevant stakeholders in this area have also considered factors from the psychosocial environment as determinants of the health status. More recently, research has broadened the focus to embrace the digital world as an additional environmental 'layer', with implications for both the human health and the sustainability of natural resources. The concept of digital pollution is aptly summarized in the following excerpt of Judy Estrin and Sam Gill, published in Washington Monthly "digital pollution is more complicated than industrial pollution. Industrial pollution is the by-product of a value-producing process, not the product itself. On the internet, value and harm are often one and the same. It is the convenience of instantaneous communication that forces us to constantly check our phones out of worry that we might miss a message or notification. It is the way the internet allows more expression that amplifies hate speech, harassment, and misinformation than at any point in human history. And it is the helpful personalization of services that demands the constant collecting and digesting of personal information. The complex task of identifying where we might sacrifice some individual value to prevent collective harm will be crucial to curbing digital pollution. Science and data inform our decisions, but our collective priorities should ultimately determine what we do and how we do it." This new vista is linked to environmental health because of the impacts on health arising from human-digital interactions, in terms of both physical (e.g., weight gain, sleep disorders) and psychological health (e.g., addictive behavior, depression, hikikomori syndrome). On the other hand, and with regards to the impact of human behavior on the environment, it is also relevant to address digital pollution in terms of the ecological footprint associated with the use of digital (namely, internet-based) systems. Indeed, the continuous increase of massive digital consumption has serious implications in terms of increased demand for energy, deployment of natural resources, toxic waste production, air pollution and global heating production. In 2015, Andrae and Edler (see the Further Reading section) estimated that digital-based communication technologies may contribute up to 23% of the globally released greenhouse gas emissions by 2030.

Several efforts from different academic and non-academic institutions, including governmental organizations, have been made in order to define and operationalize the object of study and the area(s) of intervention of EH. These endeavors have their roots in the contemporaneous projection of the 'biopsychosocial paradigm of health', first proposed by Engels in 1977, but also in the increasing prominence of health promotion (e.g., the Ottawa Charter for Health Promotion as a key milestone, in 1986) and health protection as strategic pillars for the fight against disease and for providing longevity with quality of life and adequate functionality.

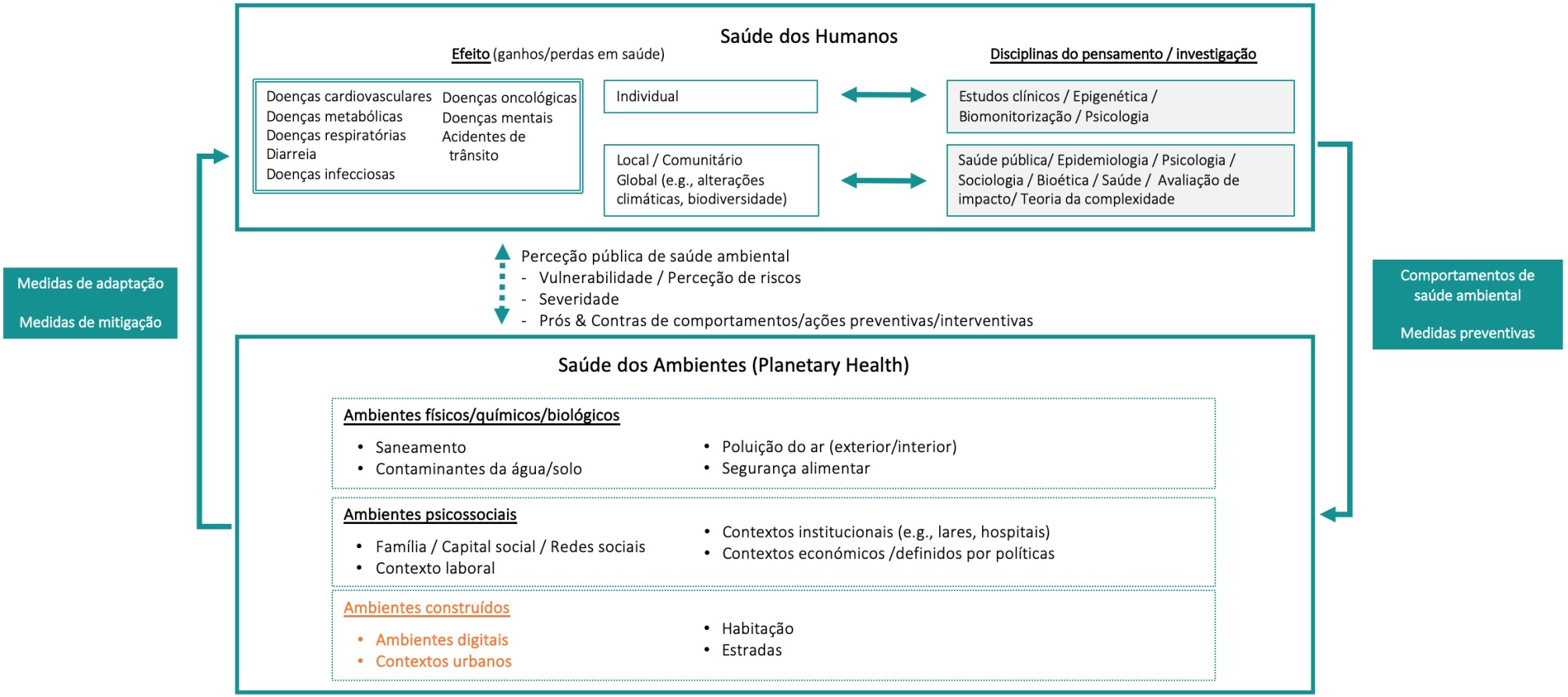
Against this background, a parallel between the evolution of the concepts of health and environments (applied to health) can also be traced. Health departed from a strong biomedical perspective, mostly centered on toxic agents and physiological parameters, to move towards a biopsychosocial perspective (mainly throughout the second half of the 20th century), which also considers social and psychological (cognitive, emotional, behavioral) pathogenic agents and parameters. This paradigm shift is associated with human longevity gains and a dramatic modification of diseases profiles, from acute to chronic diseases, and main causes of death, from infectious diseases to behavioral-related diseases (e.g., cancer, diabetes, or obesity), most especially in the second half of the 20th century. Adding complexity to health as a construct implied the above stated expansion of the list of environments that are currently recognized as potentially affecting health, thus complementing the most traditional environmental toxic-related factors with psychosocial and, more recently, digital (mainly, internet-based) factors.

Global changes, such as world population growth or the shortening of distances with the globalization of cultures and of consumption behaviors, together with the conciliation of efforts to meet standard levels of quality of life across the planet and the increase in human longevity, all these achievements of the humankind implied significant costs for natural resources. Therefore, although the main focus of EH has been placed on how to reduce exposure to environmental hazards and associated risks to human health, it is now more and more consensual that sustainable human health, as well as long-term individuals' and communities' wellbeing, is totally dependent on sustainable and healthy natural ecosystems. Within this scope, the Rockefeller Foundation-Lancet Commission on Planetary Health highlighted in 2014 the need to enlarge the meaning of EH as to a more comprehensive and bidirectional interpretation of the terms, 'environment' and 'health'. Accordingly, the public health and epidemiology perspectives, mainly ensured by the identification of environmental hazards to human health and pathways to avoid/reduce environmental-induced disease, should be complemented by guaranteeing that human health and survival do not imply an exhaustion of natural supporting systems.

Encyclopedia of Environmental Health, Second Edition, 2019, 466–474

Santos et al., 2019

saúde ambiental



Santos, O., Virgolino, A., Santos, R.R., Costa, J., Rodrigues, A., Vaz-Carneiro, A.. 2019. Environmental Health: An overview on the Evolution of the Concept and its Definitions. In: Nriagu, J. (Ed.), Encyclopedia of Environmental Health. Elsevier, vol. 2, pp. 466–474. https://dx.doi.org/10.1016/B978-0-12-409548-9.11815-9 ; ISBN: 9780444639516

Laboratório de Comportamentos de Saúde Ambiental (EnviHeB Lab)

comportamentos de saúde ambiental

- **Criar e sistematizar evidência acerca da prevalência, dos determinantes e dos efeitos dos comportamentos/ hábitos relacionados com a saúde e o ambiente**
- **Identificar determinantes de transição comportamental (comportamentos patogénicos e salutogénicos)**
- **Desenvolver e avaliar o impacto dos contextos ambientais nos comportamentos relacionados com a saúde**

Projectos

biomonitorização humana

HBM4EU science and policy for a healthy future

Os objetivos gerais do programa são:

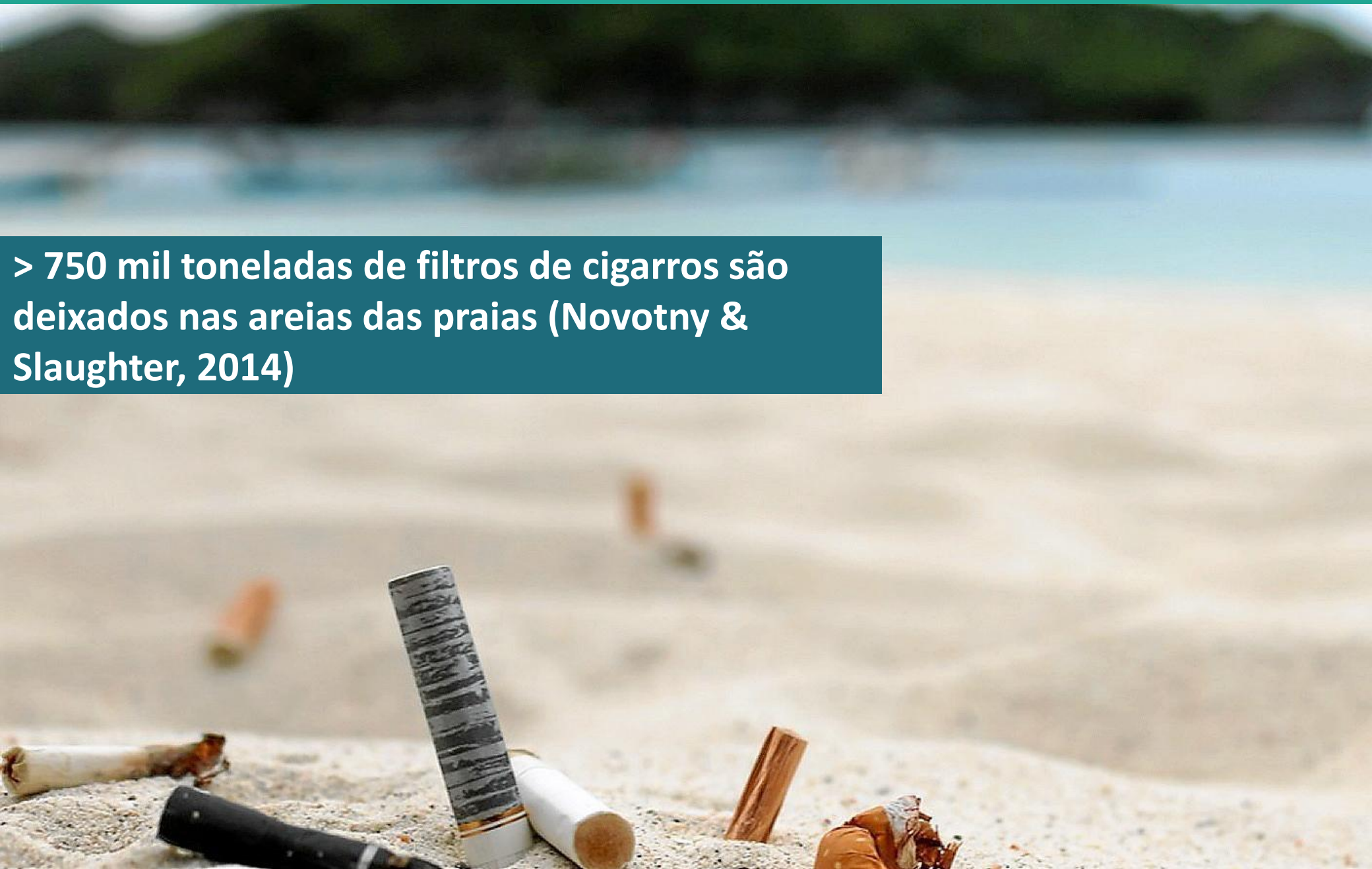
- **Avaliar a exposição humana a agentes químicos na Europa**
- **Desenvolver competências para estabelecer uma Plataforma Europeia de Biomonitorização Humana**
- **Estabelecer um diálogo com os decisores políticos**

www.hbm4eu.eu

Esta iniciativa recebeu financiamento do programa para a investigação e inovação da União Europeia Horizonte 2020, ao abrigo do contrato de subvenção N° 733032.

nicotina nas águas do litoral

> 750 mil toneladas de filtros de cigarros são deixados nas areias das praias (Novotny & Slaughter, 2014)



nicotina nas águas do litoral

Etilfenol

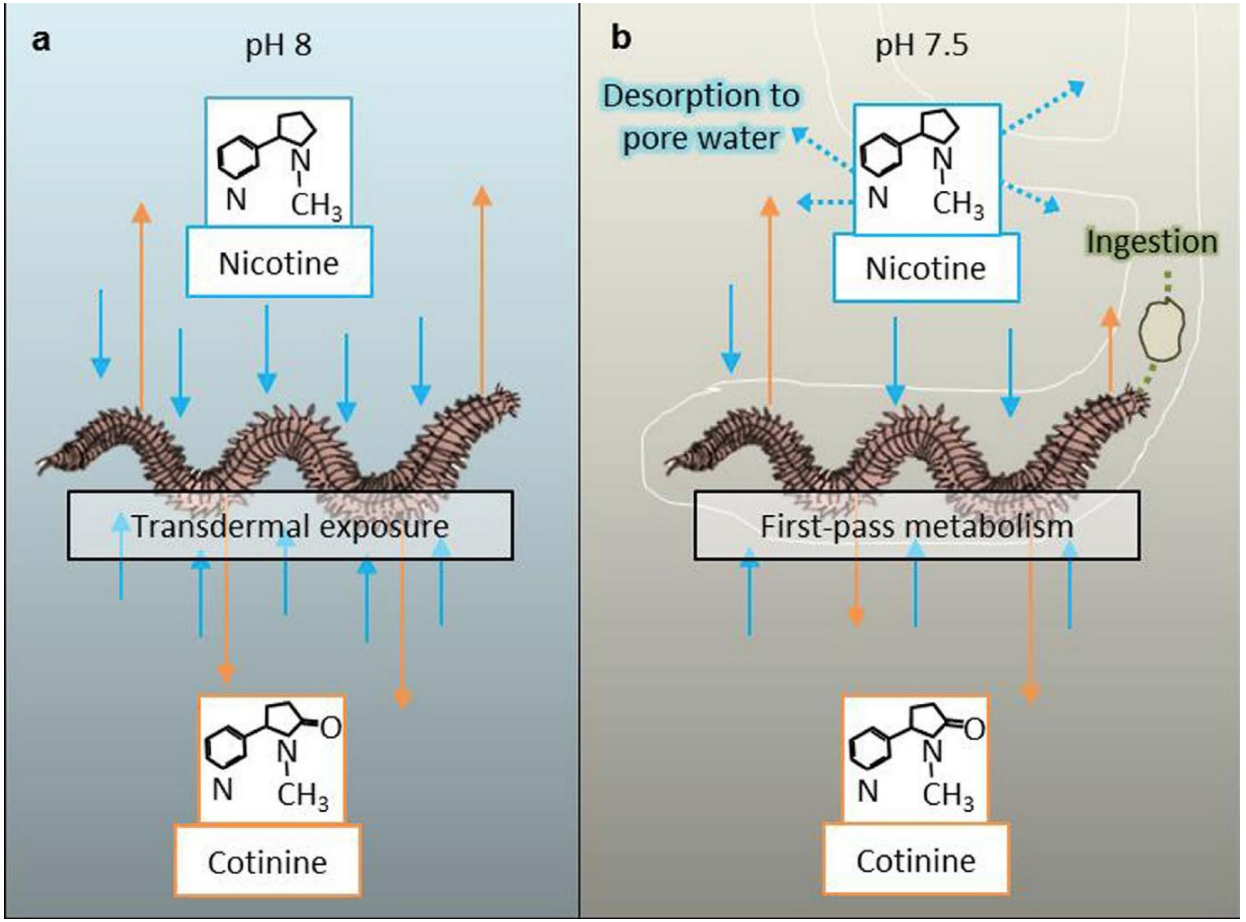
Metais pesados (e.g. Hg e Pb)

Compostos aromáticos policíclicos

Nicotina

Moriwaki et al., 2015

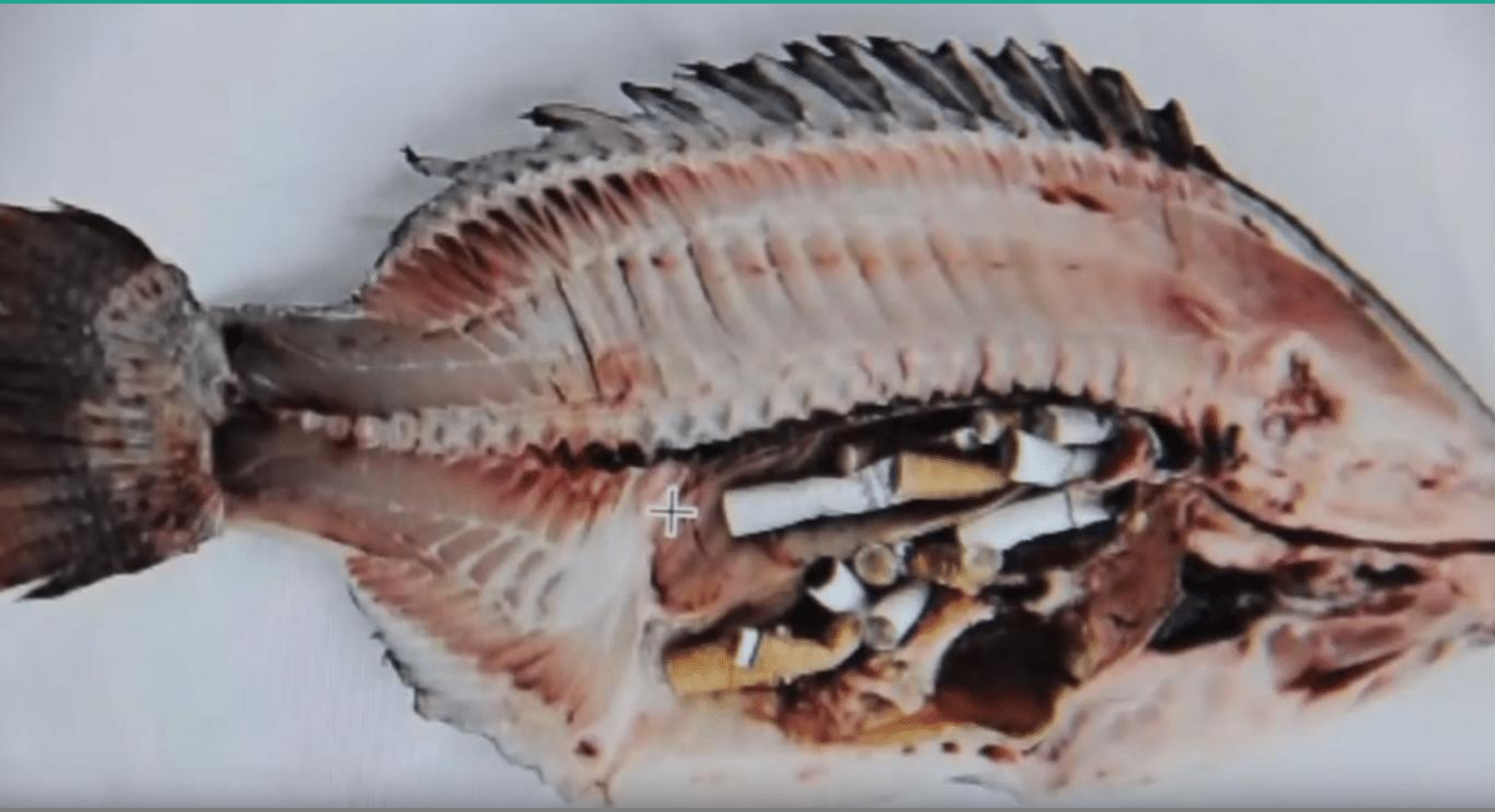
nicotina nas águas do litoral



- > 30% de perda de peso
- Aumenta em duas vezes a danificação de DNA quando comparado com o grupo controlo

Wright et al., 2015

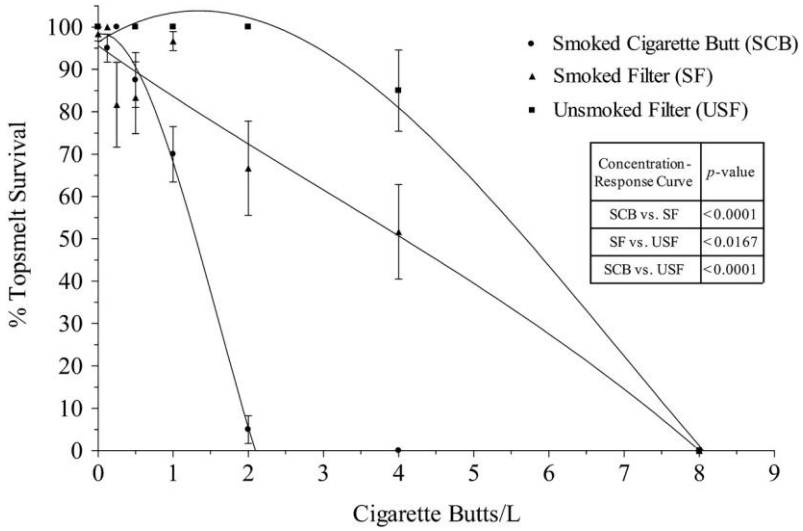
nicotina nas águas do litoral

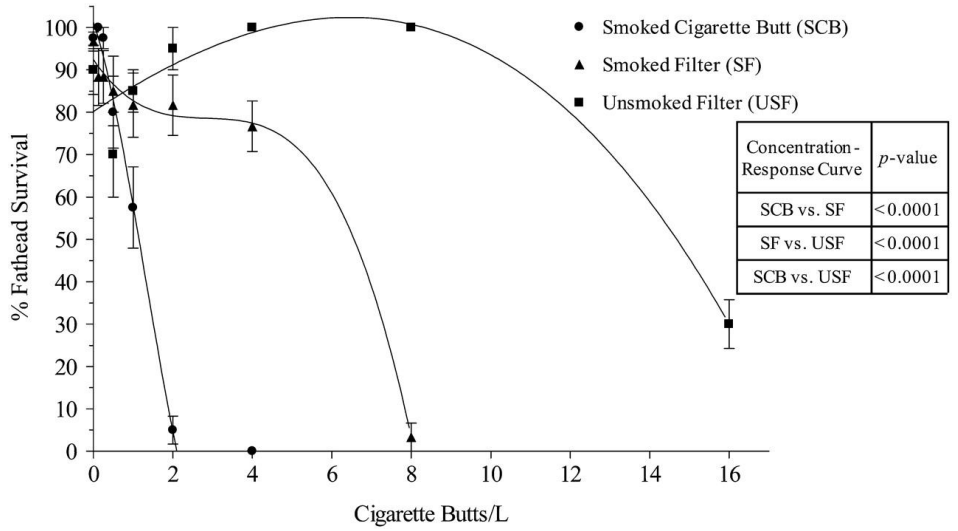


Grand Strand Cigarette Litter Reduction Project

nicotina nas águas do litoral

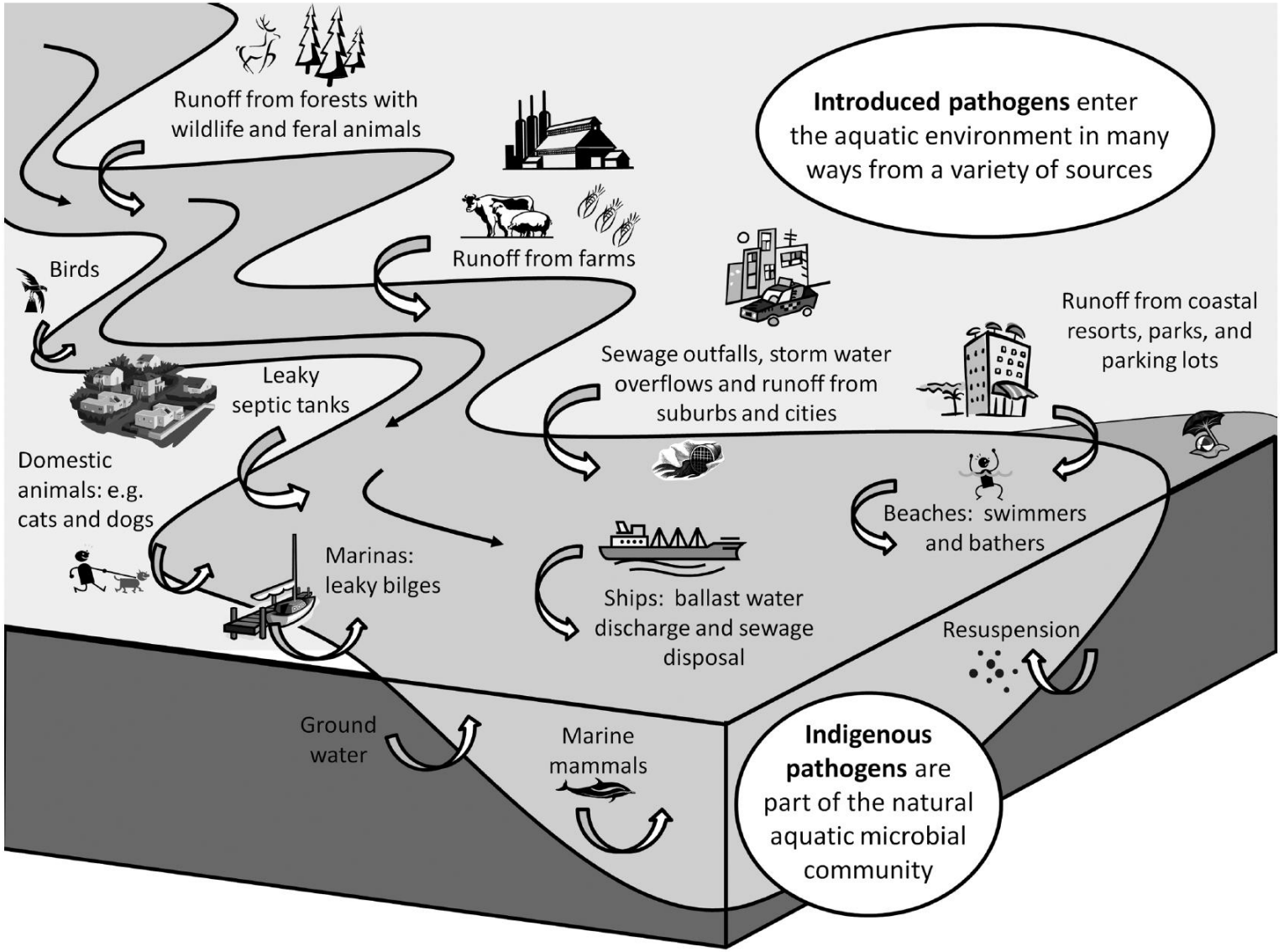
Efeitos sobre os peixes de água doce e de água salgada





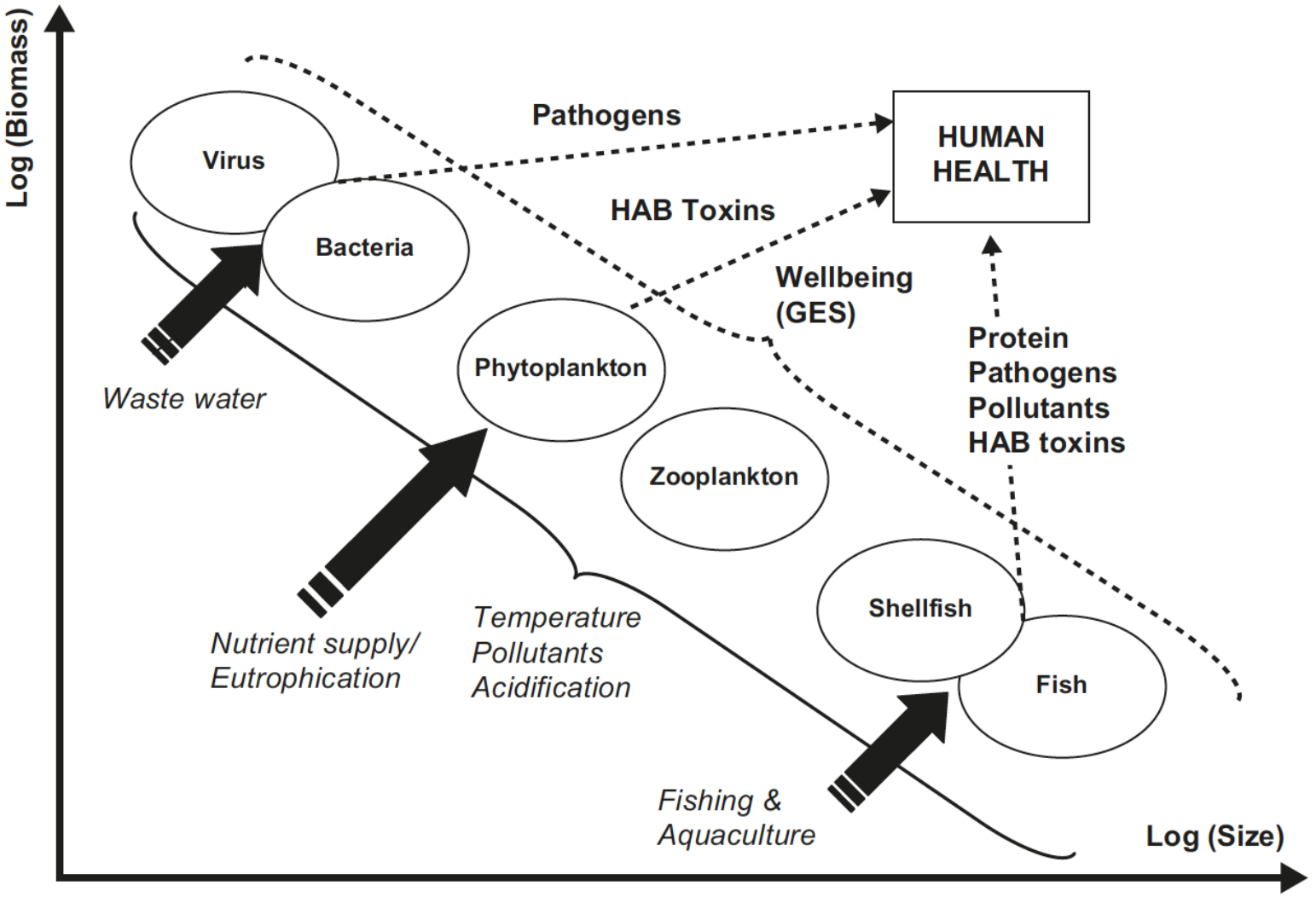
Slaughter et al., 2011

impactos



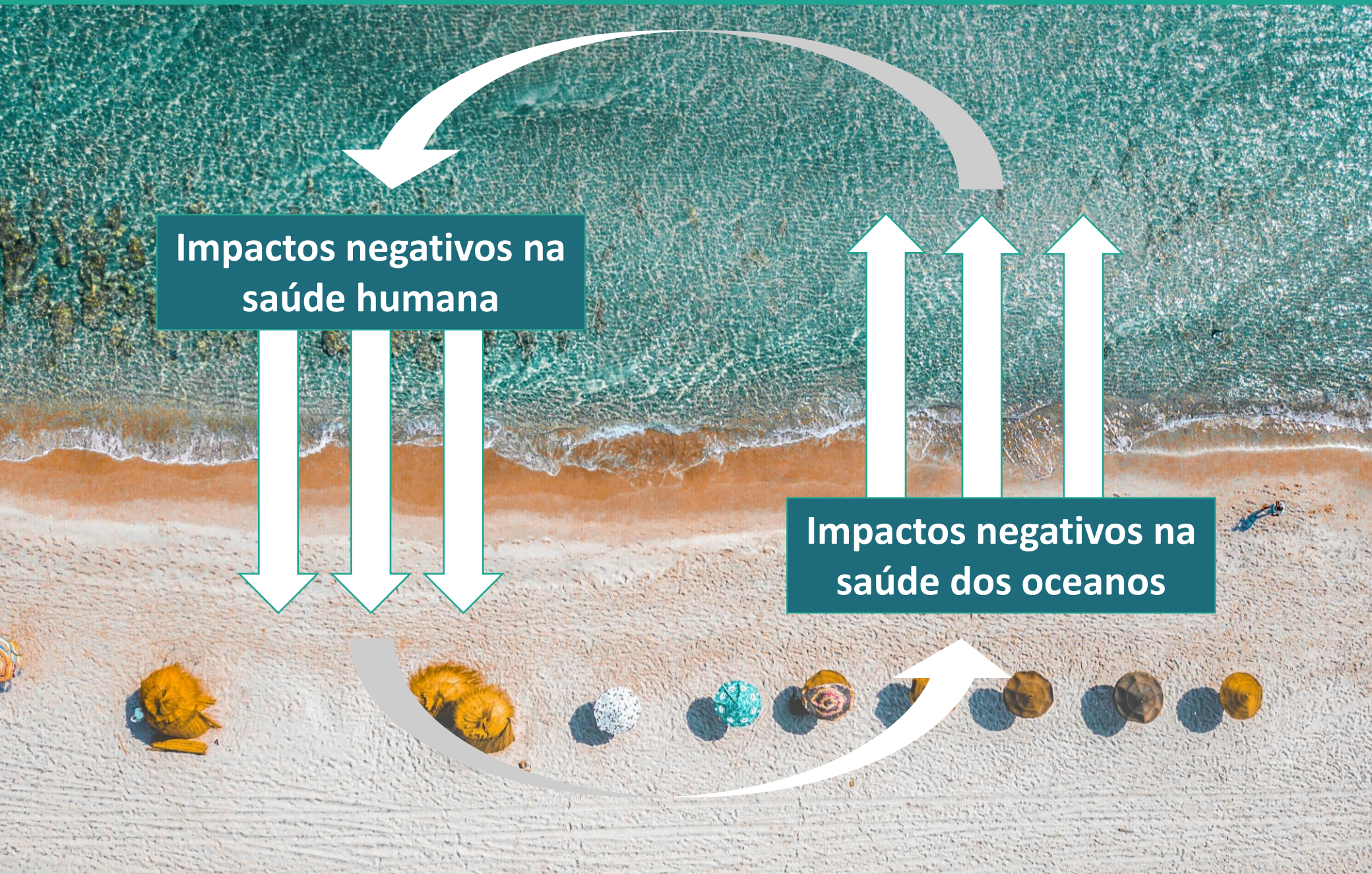
Stewart et al., 2011

impactos



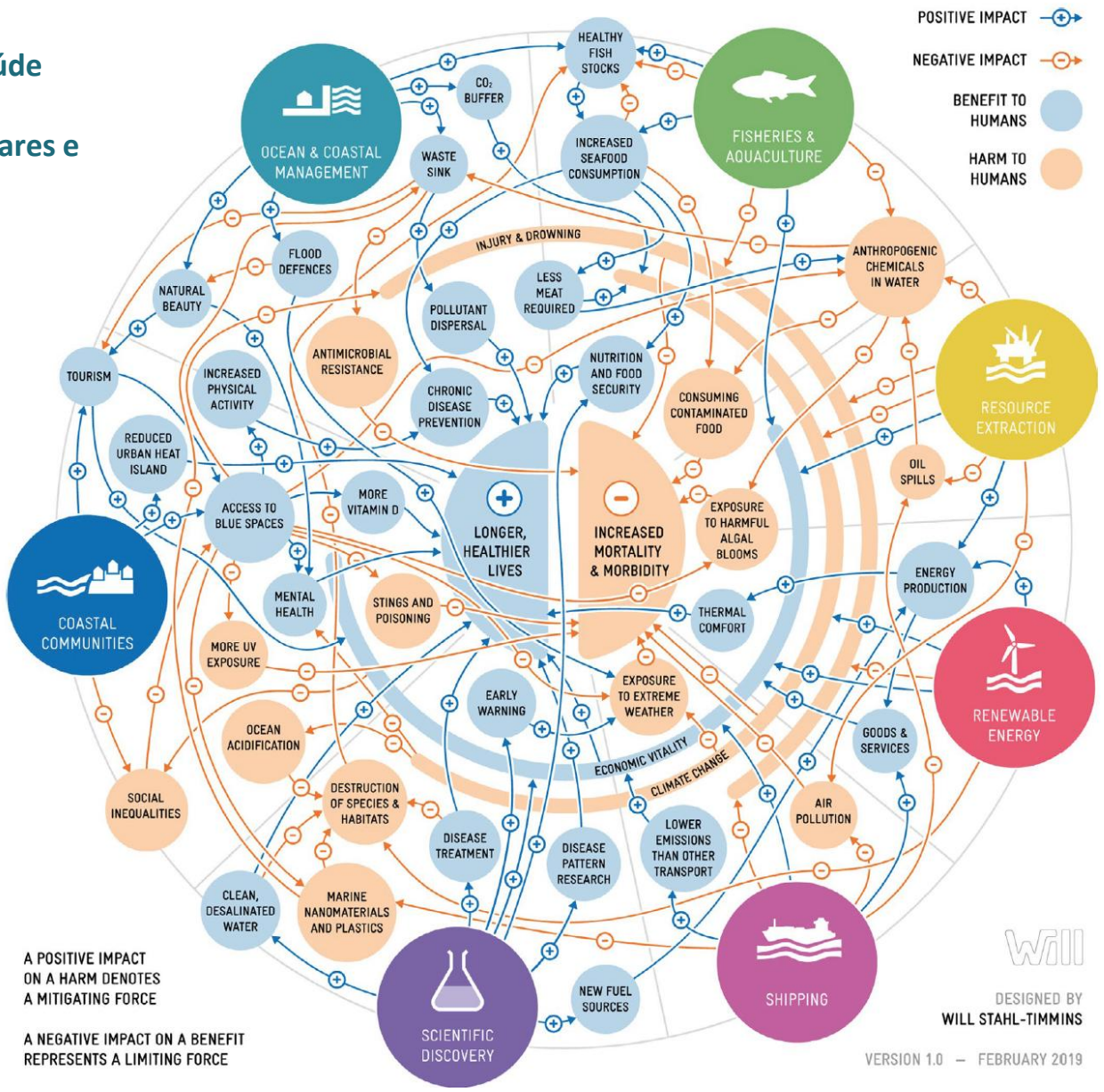
Allen, 2011

impactos


Impactos negativos na saúde humana
Impactos negativos na saúde dos oceanos

impactos

Uma selecção das interconexões entre a saúde humana e as actividades dentro e em torno dos mares e oceanos



Fleming et al., 2019

impactos

Saúde e bem-estar físico

Saúde e bem-estar psicológico

impactos

Health & Place 15 (2009) 880–887

Contents lists available at ScienceDirect

Health & Place

journal homepage: www.elsevier.com/locate/healthplace

A relationship between environmental degradation and mental health in rural Western Australia

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ARTICLE INFO

Article history:
Received 17 October 2008
Received in revised form
21 January 2009
Accepted 22 February 2009

Keywords:
Salinity
Depression
Ecosystem health
Environmental degradation
Bayesian statistics

ABSTRACT

Australia is currently experiencing a process of escalating ecosystem degradation. This landscape degradation is associated with many outcomes that may directly or indirectly impact on human health. This study used a Bayesian spatial method to examine the effects of environmental degradation (measured as dryland salinity) on the mental health of the resident rural population. An association was detected between dryland salinity and depression, indicating that environmental processes may be driving the degree of psychological ill-health in these populations.

Australia is currently experiencing a process of escalating ecosystem degradation. This landscape degradation is associated with many outcomes that may directly or indirectly impact on human health. This study used a Bayesian spatial method to examine the effects of environmental degradation (measured as dryland salinity) on the mental health of the resident rural population. An association was detected between dryland salinity and depression, indicating that environmental processes may be driving the degree of psychological ill-health in these populations.

Introduction

There have been very few studies examining the psychological effects of environmental degradation. The limited research has consistently found a positive correlation between environmental degradation and psychological distress (Sartore et al., 2008; Van Haaften and Van de Vijver, 1996a, b, 1999, 2003; Van Haaften et al., 2004). Furthermore, there is a strong association between many forms of psychological distress and the onset of depressive illness (Wheatley, 1994). Mental health problems associated with environmental degradation are not without precedent. Studies in Africa, Karakalpakstan and China found that such environmental processes were associated with higher levels of psychological distress (Crighton et al., 2003; Van Haaften and Van de Vijver, 1996a, b, 1999, 2003; Van Haaften et al., 2004).

Health effects of environmental change have been conceptualized along a continuum from sudden, immediate, traumatic physical and emotional impacts (such as the 2004 Indonesian earthquake and subsequent tsunami) to less acute processes (such as drought), which may be associated with gradual physical and psychological exhaustion (Cook et al., 2008; Were, 1989). Van Haaften and Van de Vijver (1999) noted that the rate of degradation was an important determinant of psychological distress.

This study examines the psychological impacts of dryland salinity in agricultural [illegible] indicator of mental health. Dryland salinity is a slow form of degradation (defined by the soil type and level of the water table) and the rural [illegible] degradation and [illegible] small changes in the pasture species, through to bare salt scalds (Beresford et al. [illegible] hectares (15.5%) of the south-west agricultural zone of Western Australia is already affected by [illegible] predicted to rise to 5.4 million hectares by 2050 (NLWRA, 2001). Salinity typically [illegible] subsequently agricultural production. Dryland salinity has two forms: *primary* and *secondary*. Primary salinity is the result of soils that are inherently saline as the result of a natural (non-anthropogenic) process. Secondary salinity is caused by agricultural activity, where the native vegetation is cleared and replaced with shallow-rooted crops and pastures. This shallow-rooted vegetation uses less groundwater, causing the water table to rise, bringing dissolved salts to the surface to contaminate land and surface water. Salinity often manifests itself as a visible salt scald, but may also be indicated by dead or dying trees, water-logging or the growth of more salt-tolerant species. Degradation in an affected ecosystem usually manifests as decreased biodiversity, reduced primary production and lowered resilience (Rapport, 1999). Jardine et al. (2007) suggested that there were three broad categories of human health, which could

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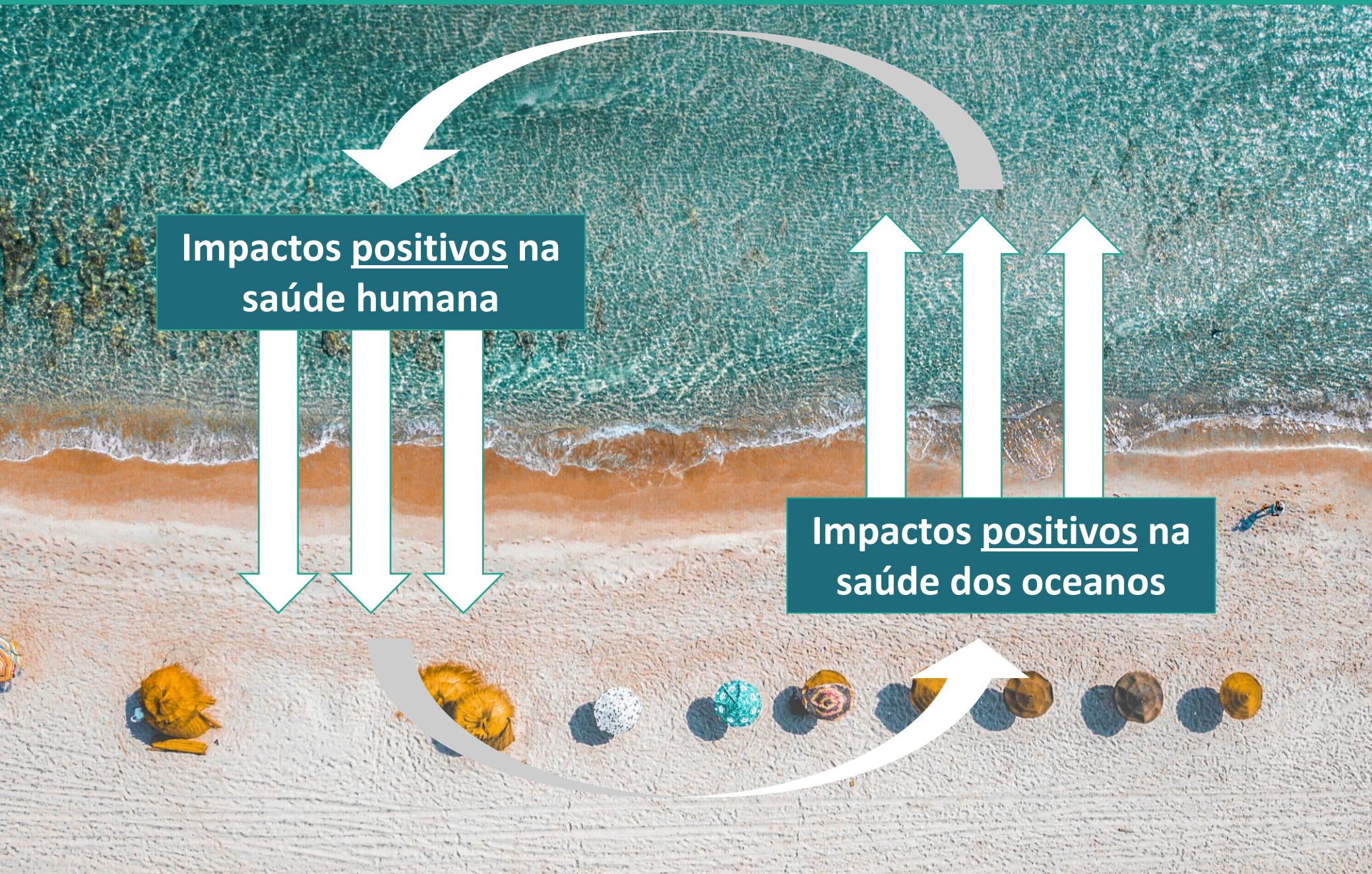
1353-8292/$ - see front matter © 2009 Published by Elsevier Ltd.
doi:10.1016/j.healthplace.2009.02.011

Speldewinde et al., 2009

impactos

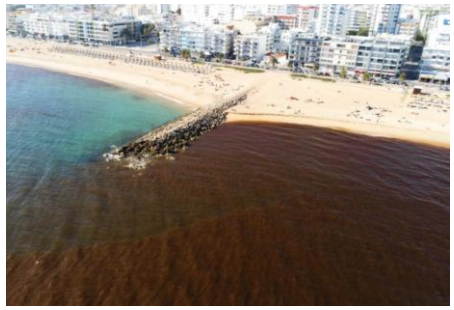

Impactos positivos na saúde humana
Impactos positivos na saúde dos oceanos

impactos

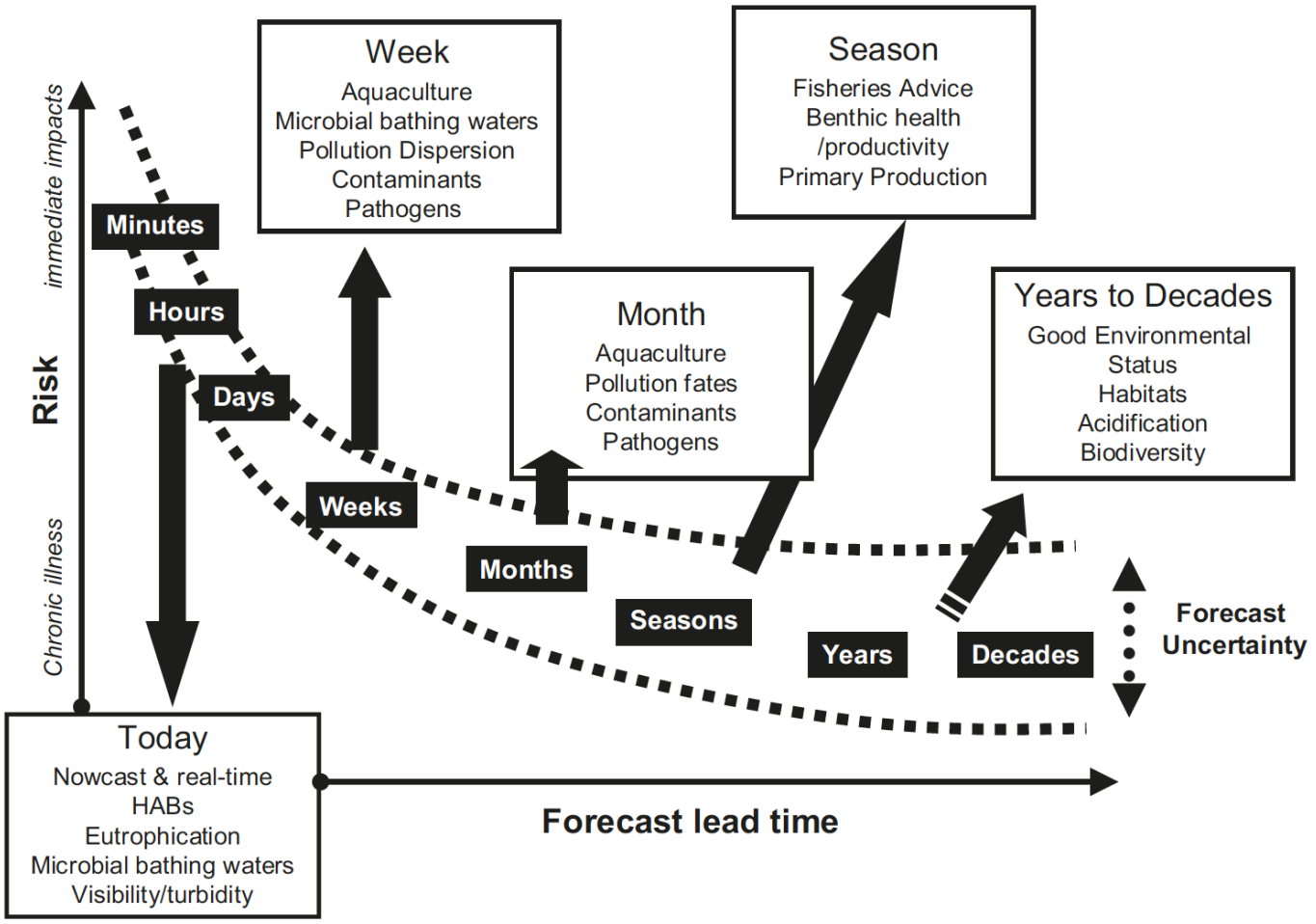
- **Valorização ecológica**
  "o que eu posso ganhar com um Oceano saudável"

- **Promoção de comportamentos salutogénicos**
  "o que eu devo fazer para garantir que ganho, em termos de saúde e de bem-estar físico e psicológico, com um Oceano saudável"

desafios

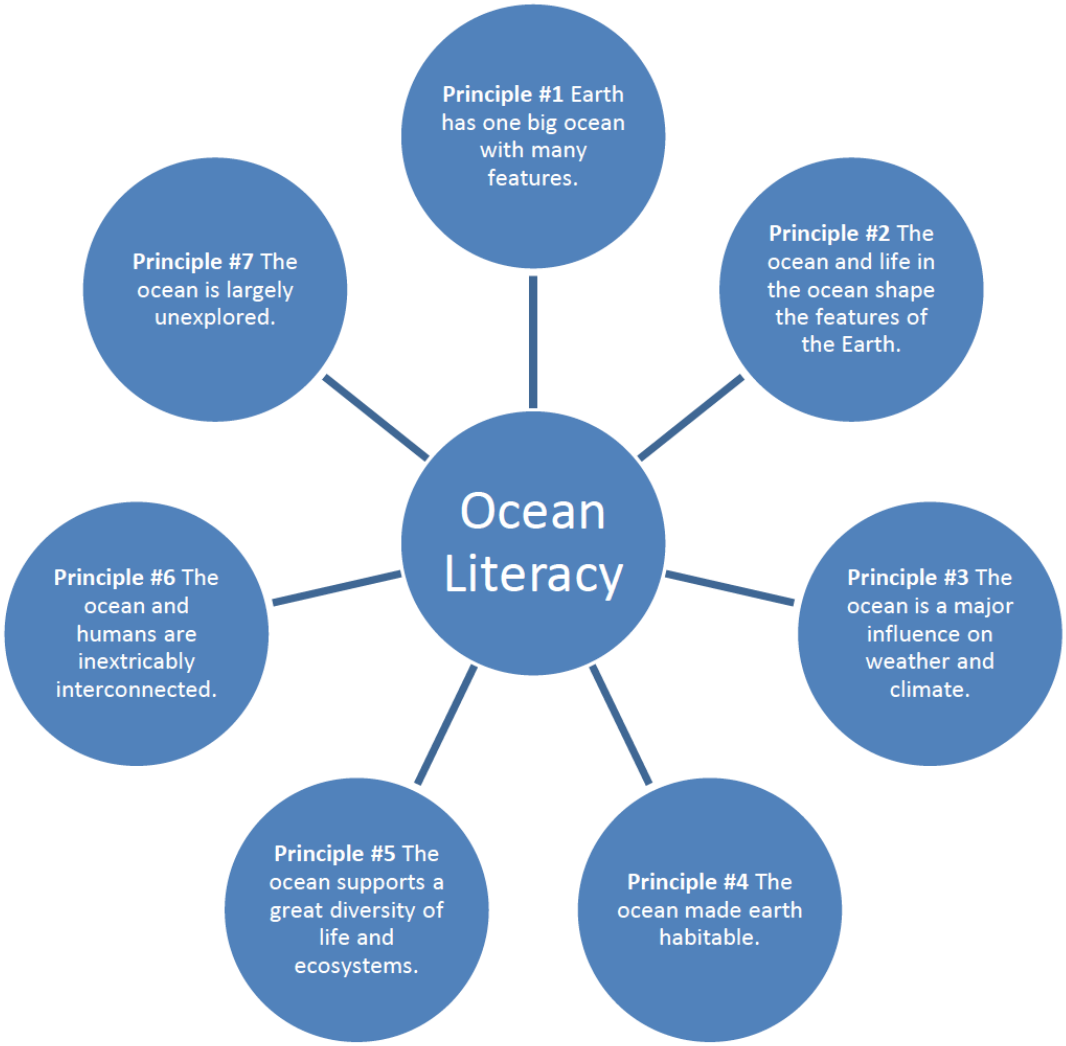


"Maré vermelha" no Algarve (2019)



Allen, 2011

desafios



French et al., 2015

desafios

Modelo de défice de informação

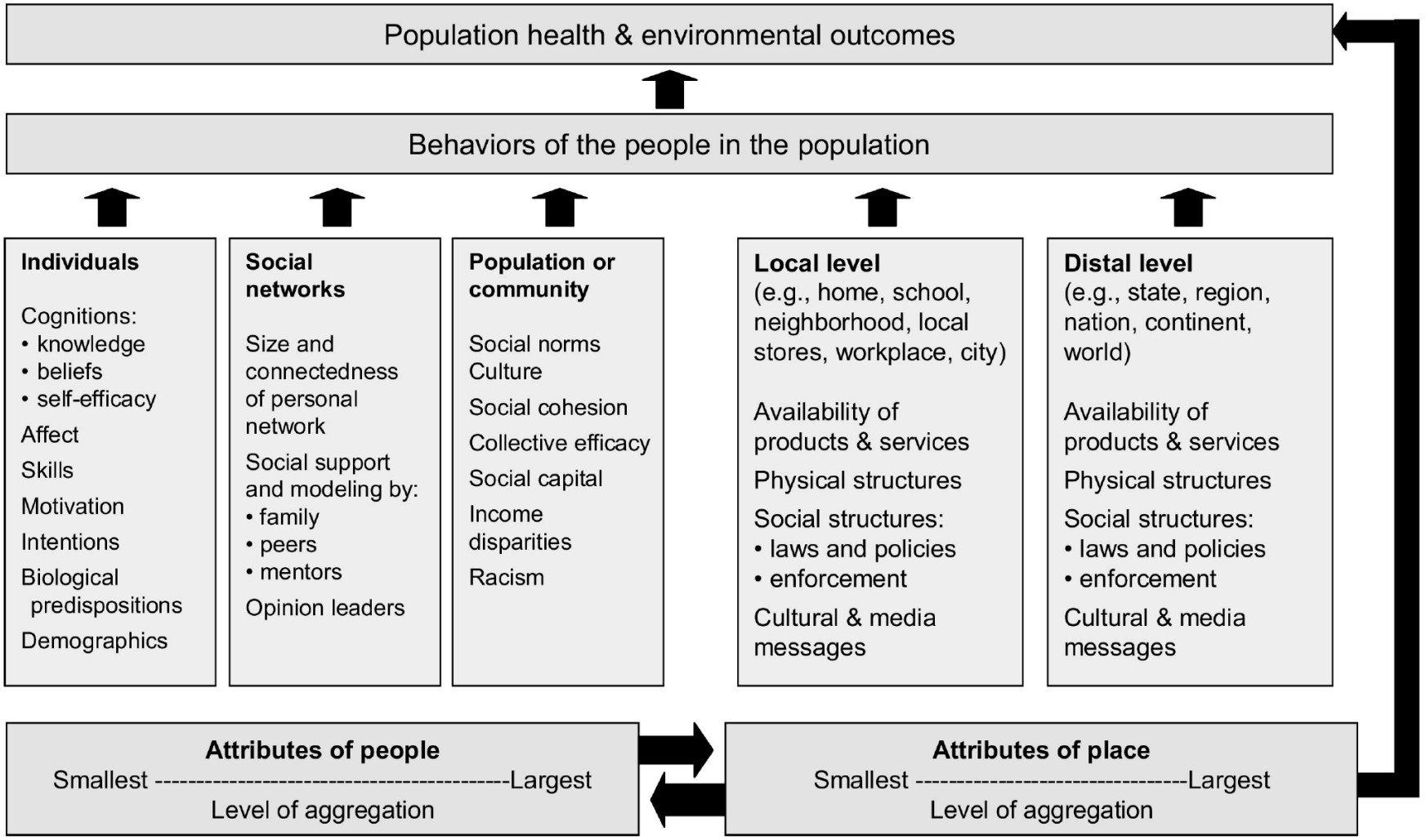
Modelo sócio-ecológico

desafios

Fig. 1 Municipal waste generated for the period 1995–2016 (values are expressed in kilograms per capita). Source: OECD. Stat Last updated—March 2018. URL: https://stats.oecd.org/index.aspx?DataSetCode=MUNW (Accessed 04 March 2019). *Note:* This dataset shows data provided by Member countries' authorities through the questionnaire on the state of the environment (OECD/Eurostat). They were updated or revised on the basis of data from other national and international sources available to the OECD Secretariat, and on the basis of comments received from national Delegates. Selected updates were also done in the context of the OECD Environmental Performance Reviews. Data are harmonized through the work of the OECD Working Party on Environmental Information (WPEI) and benefit from continued data quality efforts in OECD member countries, the OECD itself and other international organizations.

Costa et al., 2019

desafios



Maibach et al., 2008

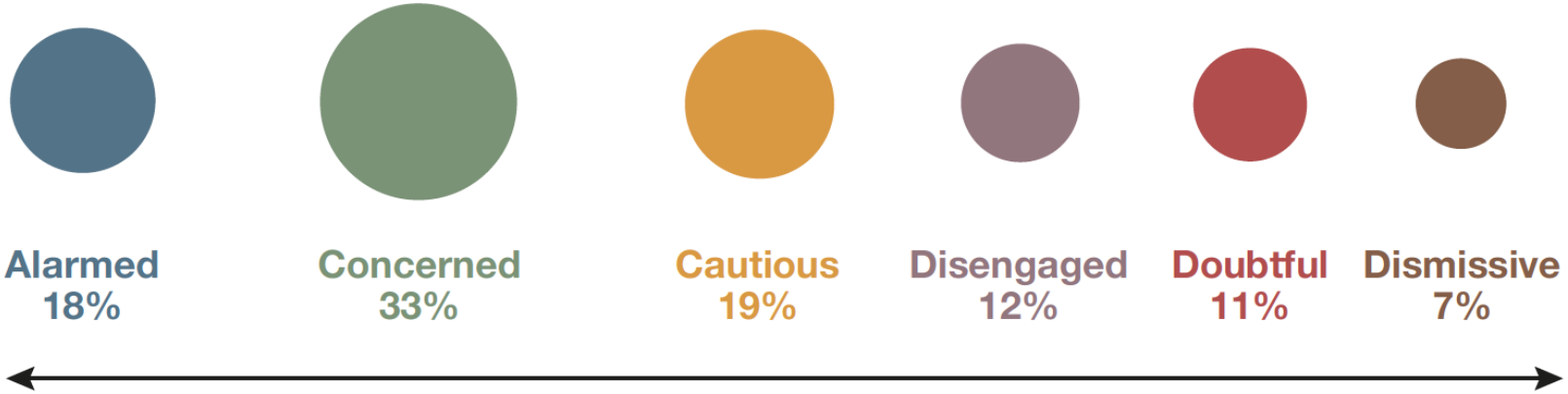
desafios

- **Alterações climáticas e comunidades costeiras (Schmidt et al., 2013; Schmidt et al., 2014)**
  - Desenvolvimento de estratégias de adaptação que envolvem as percepções e as expectativas dos habitantes das zonas costeiras em risco de erosão
  - Comunidades costeiras têm o conhecimento e querem também estar envolvidos porque reconhecem aquele lugar como seu
  - Forte apelo a um localismo pró-activo por parte do poder local
  - Desenvolvimento de estratégias comunicacionais, tendo em conta a configuração altamente segmentada e complexa das populações costeiras

desafios

Figure 1: Proportion of the U.S. adult population in the Six Americas

Proportion represented by area



n=2,129

Roser-Renouf et al., 2009

alterações climáticas 2020-2021

- **Estudar e segmentar a população Portuguesa no que diz respeito à forma como percepcionam as alterações climáticas**

- **Propor uma estratégia de intervenção dirigida que promova a valorização ecológica e comportamentos salutogénicos**

Adaptação

Mitigação

Mudança comportamental