



FORESIGHT AND MODELLING FOR EUROPEAN HEALTH POLICY AND REGULATION

9th European Public Health (EPH) Conference FRESHER pre-conference

The FRESHER project has organised a pre-conference in the framework of the EPH Conference with the triple aim of:

- Discussing preliminary results of alternative scenarios for the future of NCDs in Europe based on identification of major structural trends, drivers and pre-emerging issues
- Taking the opportunity of the pre-conference for enriching and validating these scenarios through an interactive process with the participants. Debating implications for policy and research
- Presenting how these scenarios will be integrated in a quantitative exercise using microsimulation modelling techniques

This report offers an overview of the presentations held and the discussion points emerged.



ABOUT THE FRESHER PROJECT

In the last two decades, chronic non-communicable diseases (NCDs), mainly cardiovascular diseases, cancers, diabetes, chronic lung disease, depression, musculoskeletal and neurological diseases, are the leading cause of death, disease and disability in the WHO European Region. In Europe, NCDs account for nearly 86% of deaths and 77% of the disease burden, putting increasing strain on health systems, economic development and the wellbeing of large parts of the population, in particular people aged 50 years and older. At the same time, NCDs are responsible for many of the growing health inequalities that have been observed in many countries, showing a strong socioeconomic gradient and important gender differences. Globally, there has been a growing awareness of and mandate for action on NCDs in recent years. NCDs are linked by common risk factors, underlying determinants and opportunities for intervention. It is indeed difficult to determine the direct effect of policy interventions on NCDs risk factors and on health outcomes; unless these specific outcomes are measured, doubt about an intervention's effectiveness often persists.

FRESHER is an interdisciplinary research and foresight project funded by the EU programme Horizon 2020 and stands for "Foresight and Modelling for European Health Policy and Regulation". The overall project objective of the FRESHER project is the representation of alternative futures where the detection of emerging health scenarios will be used to test future research policies to effectively tackle the burden of non- communicable diseases (NCDs). More precisely, FRESHER will pursue four goals with a strong interaction between them:

- 1. To produce quantitative estimates of the future (horizon 2030 and 2050) global burden of chronic NCDs in the EU and its impact: on health care expenditures and delivery, on population well-being, on health inequalities and socio-economic inequalities.
- 2. To base such estimates not only on extrapolation of observed past health trends but also on foresight techniques giving credit to the interdependencies of structural long-term trends in demographic, gender relations, technological, economic, environmental, and societal factors for European countries (horizon 2050).
- 3. To illustrate options for decision-makers in order to contain the burden of NCDs and its negative impacts on wellbeing of European individual citizens and societies as a whole. This goal implies to simulate modifications through time of the four above outcomes according to alternative (health and non- health) policy choices.
- 4. To promote an interactive process with key actors in public health and European policies in elaborating, fueling and disseminating both foresight scenarios and results of the micro-simulation model as well as policy recommendations deriving from their results for future health research and policies (health and non-health) affecting population health and well-being.

More information on FRESHER Scenarios, microsimulation and policy work are available at the <u>end of this report</u>.



FRESHER PRESENTATIONS

FRESHER Project Coordinator **Pr Jean-Paul Moatti, AMU, welcomed the participants and gave an** <u>overview of the FRESHER project</u>. Along with the overall introduction to the project and its partners, the attention was focused on the value added of combining qualitative foresight and scenario building with a quantitative microsimulation approach.

Michele Cecchini, OECD, presented the <u>microsimulation modelling approach of the FRESHER</u> project. He introduced a set of policy questions which the model aims to answer, as well as its general framework and main elements. Mr Cecchini illustrated the preliminary results of the model to show how the scenarios and policies will be integrated in the model in order to provide possible alternative estimates on the future of health in Europe.

Andrea Ricci, ISINNOVA, introduced the FRESHER scenarios. He included a brief introduction on the methodology of Scenarios building in general terms, and then focused on FRESHER Horizon scanning and scenarios aims, activities and results. Andrea Ricci offered an overview of the eight trends that were identified in the horizon scanning exercise as underlying drivers of NCDs in Europe.

Stefano Vella, ISS, presented the process and the objectives of <u>linking scenarios to policy</u> <u>recommendations</u>. He gave an overview on the risk factors of NCDs, possible existing ways of tackling them and the high level of inequality in global health, particularly referring to NCDs. He stressed the importance of socio-economic, cultural, political and environmental determinants of NCDs and, thus, the high relevance of a comprehensive and cross-sectoral health policy, recalling the eight trends that will characterize the FRESHER health scenarios. An extended pre-conference policy discussion document can be downloaded <u>here</u>.



from left to right: Jean-Paul Moatti, Michele Cecchini, Andrea Ricci, Stefano Vella at the FRESHER preconference



WORKING GROUPS DISCUSSION: KEY TRENDS AND THEIR IMPACT ON NCDS

The workshop participants were divided in two larger groups and four subgroups to discuss the following eight trends:

- 1. Socio demographic trends: population change and urban development, moderated by Susanne Giesecke and Beatrix Wepner (AIT)
- 2. Environmental trends: climate change and agriculture and food trade, moderated by Andrea Ricci, Giovanna Giuffrè and Sara Baiocco (ISINNOVA)
- 3. Economic trends: equity and global economic innovation moderated by Jean-Paul Moatti (AMU) and Masha Smirnova (EPHA)
- 4. Socio technological trends: innovation in medicine and citizens empowerment moderated by Stefano Vella, Benedetta Mattioli and Maria Giovanna Quaranta (ISS)

	-2	-1	0	+1	+2]
Decrease of healthy life years			Demographic change			Increase of healthy life years
Increase exposure to air pollution			Urbanisation			Decrease exposure to air pollution
Increase extreme events and heat waves			Climate change and low carbon transition			Decrease extreme events and heat waves
Unhealthy diet			Agriculture & global food chains			Healthy diet
Less healthy life- styles / access to prevention			Citizens empowerment			More healthy life- styles / access to prevention
Limited impact on population health			Innovation in medicine			High impact on population health
Stagnation Decrease of healthy life style			Innovation (global)			Better socio- economy situation Healthy life-styles
Increase of GINI index			Equity			Decrease of GINI index

Table 1: Trends and their evolution



Following questions were put forward in respect to the above trends:

- ✓ Considering the trends in your group where do we stand now on a scale from 2 to +2?
- ✓ Which policies could maximize the positive or minimize negative effects of the two trends influencing NCDs in your group?
- ✓ Where do you identify major gaps in research that could help policy makers to develop new and effective policies tackling NCDs?
- ✓ Considering the discussion in your group to where do you think the trends will develop to in 2030 on a scale from 2 to +2?



Group discussion on trend evolution moderated by Andrea Ricci



OUTCOMES OF DISCUSSION ON SOCIO-DEMOGRAPHIC AND ECONOMIC TRENDS

Upon gathering opinions on the current state of development related to each trend, participants were asked to 'rate' (from -2 to +2) trends by sticking a note on a table like the one reported below. Towards the end of the interactive session, participants voted on the evolution of the same trend at future Horizon 2030.

VOTING ON TRENDS AND TREND EVOLUTION



Table 2: Trend evolution socio-dem.,econ.trends

In the working group on socio-demographic and economic trends, 16 participants took part in the voting. While the socio-demographic trends are perceived already as quite positive (i.e. majority of participants voted for positive values for both current state and 2030 evolution), a more negative perception characterized the voting for the economic trends (i.e. majority of participants voted for negative or lower values of the trends for both current situation and 2030 evolution).

Participants assessed the **ageing trend** as quite positive but no paramount improvements are imagined by 2030. Conversely, **the urbanization** trend moves towards a healthier frontier even in a landscape still characterized by low **economic growth** and the persistence of **inequality**.



POLICY OPTIONS AND RESEARCH GAPS

Table 3: Policy options and research gaps to maximize the positive and minimize the negative effects of the trends analyzed.

Trend	Policies
Ageing trend	 ✓ Empowerment of people - Person based medicine ✓ Health in all policies to strengthen health promotion programmes and health behavior change across life course, including research and interventions for different population groups, preferably with interregional dimension. Needs to be longstanding and sustainable ✓ Apply migrant friendly policy with focus on integration (work & welfare) ✓ Recognition of subgroups in populations with different approaches - recognize differences in approaches, have to accept them and work with them
Urbanization trends	 Electric transport - air pollution in cities, German goal to get rid of combustion engines is a good idea, electric transport in cities supported Increasing physical activity in workplace setting Ensure access to good quality health services for urban and rural populations - e.g. in Finland next health care can be very far away Inter-sectoral policies - ensure coherence among all urban decisions Equitable urban planning - green spaces and promotion of physical activity for all - address social, environmental determinants of health inequities in urban areas New regulations for buildings to increase opportunities for physical activity Cities / urban development with living areas for all ages Policies for community development & neighborhood development
Economic innovation	 ✓ Major investment in access to university education, technical, high level education ✓ Incentives to promote networking in population and participation: recourses to incentives, people involvement; co-design & co-creation. Ask people to be part and give them resources ✓ policies for improving physical activity and healthier workplaces
Equity	 ✓ Base "salary" for everyone (universal basic income) ✓ Decreasing prices on healthy food could be successful policy for reducing inequality ✓ Primary health care orientation - strong health care system for disadvantaged groups needed Accessible primary health care and holistic approach based on living areas – reduce access barrier and ensure primary care is accessible for everyone



· · · · · · · · · · · · · · · · · · ·	Focus on social welfare programs and public health on
	single-parent households and children (research shows that
	those yield most returns, help with children's health and
	cognitive development)
	More financial support for parenthood
	Policy on education to increase health literacy and
	capability - different approaches for people who are illiterate,
	different level of literacy, policies on education
	• Promote EBD Health (education) interventions
	(promotion) at school/university/work
	 Education from primary school onwards
	Financial policies for low "wellbeing index" classes, protection
	from health-related catastrophes - inequalities cause different
	health levels, national or community level should have
	measures to prevent catastrophic events
\	Reduce out of pocket expenditure in countries where it is very
	high (e.g. some CEE countries) – often in these countries also
	high NCD burden can be found (Latvia, Lithuania, Bulgariaetc)
	How to get funding: Financial Transaction Tax / property /
	Real Estate Taxes / Individuals should declare annually not just
	income but also wealth to their governments (reference to
	Thomas Piketty)
	Increasing taxation on sweets and tobacco products
	Promote social investments more broadly to reduce health
	disparities in Europe (e.g. EU funding for investment in health,
	broader geographic coverage)



The group further engaged in discussion to identify some of the following research gaps:

- Problem is to **implement the projects with decision makers**, data are not used by decision makers, need define research objectives with decision makers and implementation support, otherwise research results will vanish into nowhere.
- How to summarize and implement research results to policy changes? Often similar findings in research, but why does it not show in policy yet? How to get to implementation on national, local levels? How can government system change? How to find ways? Are things based on evidence that decision makers put in action? Implementation research should be higher on the agenda
- Input implementation? e.g. in the Netherlands all **PhD** students have to attend a **course** on implementation
- Best measures? Adapt classical health care programmes, better bridge gaps between medical progress, e.g. identifying risk factors, we all push for the idea that non-health policies can change health (e.g. redistribution of wealth, urban development) we have no clear evidence yet, so not convincing to policy makers to link these factors.
- **Nutritional science causal studies on nutrition** would be helpful, not only concentrating on one factor, like fat. On international level not only national
- Interaction within different disciplines: e.g. cooks in research projects, some militant of public health pursuits, more alliances of the kind can be found
- Government dictates what the research should be on, should be the other way around, as funds are reduced
- Idea: experiment with radical communication: mass marketing, tabloid press, etc. populistic advertisements for health issues, slogan style messaging, will seem less professional, but perhaps this will help for promotion



Group roundtable discussion on socio-demographic and economic trends



OUTCOMES OF DISCUSSION ON ENVIRONMENTAL AND SOCIO-TECHNOLOGICAL TRENDS

Upon gathering opinions on the current state of development related to each trend, participants were asked to 'rate' (from -2 to +2) trends by sticking a note on a table like the one reported below. Towards the end of the interactive session, participants voted on the evolution of the same trend at future Horizon 2030.

VOTING ON TRENDS AND TREND EVOLUTION



Table 4: Trend evolution envi, socio-tech.trends

Innovation in medicine

In the working group on environmental and socio-technological trends, 14 participants took part in the voting exercise on the evolution of the trends. It is worth noting that all the trends are perceived as improving from now to 2030, although not strikingly. On **climate change**, the perception about the current situation is rather moderate. Indeed, according to the group discussion, there is apparently no alignment between international governance agreements and people's perception, as if there is no trust in effective implementation of policies. Green technology is seen as expensive and not affordable for all. At a global level, it was noted, emerging economies are not implementing decarbonization. However, the participants envisaged an important improvement by 2030. Again, there is some distribution in the vote for 2030, which might reflect geographical differences in decarbonization.



The participants expressed a very negative opinion on the current state of **agriculture and global food chains.** From the group discussion, there seems to be a general diffidence towards agri-farms and transparency of food-formulation. Nonetheless, it was recognized that there is a general increase of awareness of citizen's and raising interest in healthy food and food formulation. This probably drove the positive evolution of the trend that emerges from the voting for 2030.

Concerning **citizen empowerment** there is no clear majority, as the votes are rather distributed, probably due to a lack of clarity in the definition of the trend. However, the group discussed two dimensions of trend: reliability of information and education of citizen. Finally, the voting reflects **innovation in medicine** rather positively at the current state and participants are still optimistic in the voting concerning 2030, imagining a further improvement of the trend.

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POLICY OPTIONS AND RESEARCH GAPS

Trend	Policies		
Environment	 Suggestions on policies were: ✓ Policies to maximize affordability and easy access to green economy (electrics car etc) ✓ Inclusion of agriculture, especially livestock, in climate policy and instruments (eg proper GHG accounting, emission trading, GHG taxes) 		
Agriculture and food trade	 Some of the policies suggested are directed at citizens, in order to create a better awareness or to suggest healthier habits: policies for sensitization on healthy diet (since early age e.g. school gardens) Others are directed at food industry: regulation on sugar/ingredients of processed food&drinks (e.g. tax, like in France) decrease portion size (e.g. reducing packaging of products or different size options in fast food/restaurants) Setting of stricter standards and better enforcement Introduce legal limits for certain nutrients in processed food. (e.g. TFA, SFA, added sugar) Many suggestions were related to pricing policies: food pricing policies Economic instruments on food & drinks (e.g. sugar tax/soda tax, min unit pricing alcohol, meat levy fiscal policies to favor healthy diets Other suggestions were more general in their formulation: Introduce geographical population limits ("zoning") for fast food/canteen establishments especially in low SES areas Agri and health policies integration (- subsidies -education) 		
Citizens empowerment	 Participants consider citizen empowerment dependent mainly on education and suggested policies oriented at: ✓ improving health literacy ✓ systemic control against non-institutional information (i.e. health information from social network) to promote a good self-determined change Not all the participants agreed on the efficacy of policies based on education and suggested as more effective options: ✓ policies for the improvement of workplace environment to facilitate healthier choices (e.g. flexible hours to engage in physical activity). ✓ policies to promote healthy habits may also be healthy lives "incentives" (e.g. at work). ✓ policies oriented at prevention and care (screenings etc on large scale). Moreover, policies that could minimize the negative effects of citizen empowerment may be oriented to rethink the role of NGO, both in terms of funding and responsibility. 		

Table 5: Policy options to maximize the positive and minimize the negative effects of the trends analyzed



	Finally, to maximize the positive effects of this trend it was suggested to ensure an "inequality reduction" focus in all policies.
Innovation in medicine	 All participants agree on the important and positive impact of medical innovation on population health, and consider the "economic issue" as a key point in future policies, as detailed below. ✓ price regulation of drugs ✓ increase of research financing ✓ revision of regulation of intellectual propriety rights on medical innovation e.g. drugs ✓ fight against monopoly-rents of pharmaceutical firms ✓ Regulatory rules based on "true added value" of a new drug or diagnostic (aiming at saving money for other interventions) The second key point that emerged was to address access with future policies: ✓ no approval (e.g. of drugs) without access ✓ general policies to facilitate access to medical innovation and innovative treatments Moreover, one respondent pointed out the necessity to improve national prevention screening programs and vaccination (e.g. HPV).

Participants also identified research gaps and possible room for improvement. The participants spotted research gaps in **agriculture and food**, like the need of a comprehensive and holistic cost/benefit analysis tool to evaluate food policies (e.g. food taxes) and their effects across the food chain was pointed out, as well as studies on the impact of various labelling schemes on consumer behavior. Finally, it emerged the need for more research aiming at finding reformulation alternatives to some "unwanted" food components (e.g. antibiotics, palm oil, TFA, refined sugars...)

A first gap in the available methods to measure the **health impact of policies** was identified. New methods may facilitate evidence-based decisions and could help policy makers to develop new and effective policies to tackle NCDs. Financial, social and research gaps were also identified:

- \checkmark new financial models needed to allow equal access to medical innovation
- ✓ better knowledge in the R&D production function of pharma-firms.
- ✓ impact of patient involvement in clinical research on outcomes

As already mentioned, education alone may be not effective to maximize the positive effect of citizen empowerment to tackle NCDs. In this regard, **barriers that hinder citizens to put knowledge into practice (e.g. healthy diet, transport) represent major gaps.** It is crucial to understand how can we harness the resources of powerful food companies to avoid drawbacks on citizen empowerment, for example in orienting consumption towards unhealthy food and drinks.



AGENDA OF THE FRESHER PRE-CONFERENCE

Welcome and overview of the project by Jean-Paul Moatti (AMU)

Modelling and foresight: the FRESHER approach

- FRESHER modelling presentation by Michele Cecchini (OECD)
- FRESHER scenarios by Andrea Ricci (ISINNOVA)

Linking health policies to scenarios by Stefano Vella (ISS)

Working groups discussion: Key trends and their impact on NCDs

- 1. **Socio demographic cultural trends**: population change and urban development, moderators by Susanne Giesecke and Beatrix Wepner (AIT)
- 2. **Environmental trends**: climate change and intensive agriculture, moderators Andrea Ricci, Giovanna Giuffrè and Sara Baiocco (ISINNOVA)
- 3. **Economic trends**: inequalities and globalization and food trade moderators Jean-Paul Moatti (AMU) and Masha Smirnova (EPHA)
- 4. **Socio technological trends**: innovation in medicine and citizens empowerment moderators Stefano Vella, Benedetta Mattioli and Maria Giovanna Quaranta (ISS)

Working Groups reporting and plenary discussion

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FRESHER pre-conference, 9th EPH Conference, Vienna 'Scenarios for the future of health in Europe'



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FURTHER INFORMATION

More information on the FRESHER project is available at <u>http://www.foresight-fresher.eu//en/</u> The latest FRESHER newsletter (Oct 2016) showcasing preliminary project results can be downloaded <u>here</u>

FRESHER SCENARIO BUILDING PROCESS

FRESHER Scenarios will be a medium - long term vision aimed at policy-makers for planning future policy actions, delineating policy alternatives and new policy combinations.



Building FRESHER Scenarios is a systematic and creative process that first engaged a variety of stakeholders in the step of "Horizon Scanning". The Horizon Scanning aims at the identification of the NCDs related short, medium and longterm trends and drivers. To complement the literature review on well-researched risk factors, three regional workshops (Vienna, Brussels, Lisbon) were organized to elicit stakeholder's credible observations about possible changes, wider correlations and potential indications of new emerging issues. By December 2015, the results of these consultations were included in the FRESHER report "Horizon Scanning" delivered to EU stakeholders and discussed in the FRESHER High Policy Event.

The subsequent step aimed at ranking the emerged list of drivers on the basis of their importance and uncertainty and at creating the Scenarios space. For ranking the trends, a <u>survey</u> was conducted in July 2016, and the consortium is currently working on analyzing and refining the results and writing the storylines. *A second survey will be launched by February 2017 to gather stakeholders' opinion on the plausibility and internal consistency of the FRESHER Storylines and you all will be invited to take part.*

The Scenarios will be finally refined and consolidated in dialogue with the modelling work and microsimulation model developed by partners AMU and the OECD. The FRESHER project will complement its foresight driven approach by the data-driven approach. It will allow, as much as possible, for integrating in quantitative modelling the contribution of qualitative foresight scenario building, including identification of wild cards and weak signals. Therefore, it will provide an innovative approach to combining Foresight approaches with Microsimulation modelling. **The consolidated FRESHER Scenarios will be finalized by December 2017.**



FRESHER MICROSIMULATION MODEL

The <u>development of an empirically-based micro simulation model</u> is a central component in FRESHER. With input from all work packages, the model will capture social, behavioural and psychological risk factors of NCDs as well as disease onset and treatments and their health, education, labour-market and fiscal consequences for three European regions (Central-Eastern, Southern and Northern) through one unified and comparable population modelling framework. Microsimulation models are generally used to assess the impact of public policies, giving decision makers a powerful tool for an ex-ante (prior to implementation) policy evaluation. The key defining feature in all microsimulation models is the generation of individual-level data under different policy scenarios. Microsimulation models can, as a result, reproduce the characteristics and behaviours of a large sample of individuals representing the whole population of interest, and its underlying diversity. Dynamic micro-simulation models like the U.S. FEM, Swedish SISEM-LEV or the OECD CDP model allow certain characteristics, such as tobacco smoking, alcohol-consumption or air pollution exposure to evolve over time in a realistic manner due to factors endogenous within these models.



The causal chain – from behaviours to diseases

Unlike most microsimulation models that exist to date, the distinct value added of the FRESHER is that it represents a **multi-risk factor and multi-disease model** able to capture the vast majority of factors that influence health in the long term. The FRESHER model employs a so-called 'causal chain' that accounts for the interdependencies of risk factors, behaviours, clinical conditions, environmental exposures and the ways these elements interact with each other. Another innovative element of the model is the integration of quantitative modelling and qualitative foresight, taking into account trends, drivers and policy scenarios that will be used to assess policy options to reduce the burden of NCDs.

The FRESHER model will simulate a range of scenarios and assess the impact of future policies in respect to health outcomes. **The key**

outputs of the model include life expectancy changes over time periods covered by time horizons 2025 and 2050, the evolution of risk factors and disease prevalence as well as productivity impacts on employment. Another key output will account for health expenditure including how it could be modified by policies that would change the epidemiological trends predicted in the FRESHER scenarios. Upon testing and validation, the model will be released as a decision support system tool, thus helping EU bodies and policy makers to consider the full range of costs and consequences of different policy actions.

FRESHER POLICY WORK

FRESHER Policy work aims to produce recommendations to EU and to national policymakers in both the health and the non-health sectors, in order to devise, implement and harmonize European policies and actions that are likely to reduce the burden of NCDs over the next decades.

The policy activity promotes a participatory European policy dialogue, with the involvement of all stakeholders, aiming at producing a common European strategy to tackle future NCDs scenarios,



overcoming some of the existing limitations of current policies. The policy dialogue considers all areas of policy intervention, and analyses the combinatorial effect of implementing them simultaneously, and the potential for positive synergies and negative side-effects.

In evaluating interventions aimed at tackling the main NCDs and their main underlying risk factors, 4 criteria must be considered:

- 1. Health impact
- 2. Cost-effectiveness
- 3. Cost of implementation
- 4. Feasibility of scale-up

Since all countries have to make choices on how to allocate resources for health and health care, policy makers have to be guided on where to focus attention in elaborating new policies to tackle NCDs. While preventive intervention and improved access to health care can reduce premature mortality and disability, policy makers also need evidence showing if an intervention is a cost-effective use of resources in a specific resources settings and if scaling up of these interventions is appropriate, affordable and feasible.

A second objective of FRESHER Policy work is oriented to produce an **agenda for future European Health Research**, aimed at producing scientific evidence in the main areas of policy intervention, health and non-health determinants and health care systems.