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Title of your paper/presentation or poster: <b>HEALTH IMPACT ASSESSMENT FIT FOR ENERGY TRANSITION</b>	

## 1. Introduction

Energy transition requires the Oil & Gas industry to transform and reshape embracing sustainable energy resources.

Eni's distinctive strategy, which fully integrates the United Nations Sustainable Development Goals (SDGs), enables to address this challenge while accelerating the path to net-zero and keeping a sharp focus on a just transition and value creation for the stakeholders. The Company is leveraging on global upstream and partnerships with producing countries, to find alternative and additional supply opportunities; and accelerating decarbonization targets, working to offer progressively decarbonized services and products to clients, in order to effectively tackle scope 3 emissions.

Eni is focusing on the following proprietary and breakthrough technologies to both increase the efficiency of traditional business and develop new ones:

- Renewables & new energies: magnetic fusion, energy storage, solar and wave energy;
- Decarbonized solutions: Carbon Capture utilization and Storage;
- Circular and Bio-products: advanced biofuels, Bio-feedstock, Hydrogen and Waste valorization.

This process of decarbonization takes place in the context of two challenges of global significance: the negative effects contributing to climate change and the post pandemic global recovery.

Health gained increasing centrality during G20, COP26 and in general in the UN Climate conversation:

- The UN Human Rights Council recognized access to a clean, healthy and sustainable Environment as a Universal Right;
- UN Global Compact is calling on companies to take actions to sustain resilience to Climate Change prioritizing strategies that have Nature and Health co-benefits;
- WHO is calling for transformational action in every sector, including the energy one, in order to create energy systems that protect and improve Climate and Health.

The Energy Transition it's not only a matter of new technologies but it requires a paradigm shift that must consider the impacts on the health of workers and their families and of communities to avoid or minimize negative impacts.

Health and well-being are prerequisites as well as results of sustainable development, and therefore it is increasingly important to investigate the new Health-related risks and opportunities in the context of the energy transition.

In collaboration with the support of SOS International and ERM, an initial report of "Relationships of Energy Transition and Human Health as the Twenty-First Century Continues" has been issued with three main objectives:

- 1) Preliminary identification of health related risks of technologies to be used by Eni for the energy transition. The health risks have been analyzed for both workers and the communities living nearby and during construction and operation phases. The potential health risks have been summarized in a comparative matrix.
- 2) Prediction of trends that affect, either directly or indirectly, the health priorities of Eni as a company with a global footprint. The main focuses are on issues to be addressed as either risks or opportunities

for changes within the global context of climate change, pandemic and post-pandemic, and expected health system changes for the future. The key emerging trends identified are:

- Increasing attention for and requests for disclosure by stakeholders and shareholders;
- Evolution of the Health Systems;
- Regulatory anticipation and risk of lack of consistency on positioning on emerging health issues.

3) Definition of four priority areas of research which are :

- Epidemiological studies on the interaction between environment and health and health impacts of industrial activities;
- Industrial hygiene and toxicology;
- Infectious diseases, emerging diseases and regional/global health emergencies;
- Health and Social Health Models and Systems.

In addition of the various activities and actions undertaken, Eni is working to seize the opportunities of a transformation driven by technological innovation and oriented towards a new paradigm of development that allows the company to create value for stakeholders.

The Company has established a scientific independent research committee, hosted by Fondazione Eni Enrico Mattei (FEEM), an Italian research institute, to analyze and evaluate the priority areas identified by the report “Relationships of energy transition and human health as the twenty-first century continues”, and above mentioned, to guide the Eni’s work in terms of planning and development to strengthen health management models and producing and disseminating works with scientific evidence.

The committee involves:

- **Paolo Boffetta**, Full Professor, Department of Medical and Surgical Sciences, **University of Bologna** and **Stony Brook University, NY**;
- **Nicola Normanno**, Translational Research Department Director in support of cancer pathways National Cancer Institute **IRCCS Pascale Foundation of Naples**;
- **Valeria Tozzi**, Associate Professor of Practice of Government Health and Not for Profit Division at **SDA Bocconi School of Management**;
- **Walter Ricciardi**, Full Professor of Public Health, Section of Hygiene, University Department of Life Sciences and Public Health, **Università Cattolica del Sacro Cuore**, Rome, Italy.
- **Bruno Dallapiccola**, Full Professor of Medical Genetics, Scientific Director **IRCCS Bambino Gesù Children Hospital**.

The Committee has a three-year assignment, which foresees both research and dissemination activities, including a yearly event to communicate research results and a yearly publication on a scientific journal.

In order to promote within researchers’ community the importance of investigating the priority areas identified, the project established also a yearly Call for Proposals. During year one, 67 applications were received from researchers affiliated with universities based throughout Italy.

## **Health Impact Assessment in Company Management System**

Health Impact Assessment (HIA) is an integral part of Eni’s Health Management System. It provides vital support in decision-making and is in line with international best practices. It follows those operating steps that are preliminary to the forecast, quantification, management, monitoring, and evaluation of the possible direct effects on populations or mediated through the health determinants of community health. HIA, directly and particularly when integrated in the Environmental, Social, and Health) Impact Assessment (ESHIA), carries out the knowledge improvement starting from the analysis of the elements that characterize the industrial project and provides key recommendations for the sustainable development of the area of interest. The company supports two level of HIAs (as per IOGP/IPIECA guidance), mainly:

- Strategic Health Impact Assessment, which presents the proactive assessment process useful to strengthen the role of Health in the decision-making process.

- Project Health Impact Assessment, which presents the assessment process useful for the analysis of potential positive and negative impacts of a specific industrial project on the health status of a population in the project area of influence.

Analogously to the health risk management, Eni has adopted a proactive approach by integrating the HIA in almost all its industrial projects and from the early stage, even when it is not requested by local/national legislation.

## **2. Priorities for Research for year one activity of the FEEM Committee**

### **2.1. Epidemiological Studies on the Interaction between Environment, Health and Health Impacts**

#### **Focus and objectives**

- 1) Assessment of health effects of renewable and new energy technologies and rough comparison with traditional Oil & Gas activities ;
- 2) Cause-and-effect analysis of the most critical epidemiological risks generated by each technology, as well as the relationship between exposure and disease for both workers and communities;
- 3) Assessment of health benefits associated to energy transition including those related to the interaction of human health with environment and biodiversity potential changes.
- 4) Improve the process of assessment of health risks and opportunities in relation to the SDGs, in particular SDG3 and all the determinants of health.
- 5) Investigate community attitudes to current and proposed transformation of sources of energy.

#### **1<sup>st</sup> Research Year Focus**

To perform a systematic review on health effects of renewable and new energy production technologies based on Eni Energy Transition Strategy. The technologies covered include:

- Biofuel,
- Green Hydrogen,
- Carbon Capture and Storage (CCS),
- Concentrated Solar Power (CSP),
- Magnetic Fusion,
- Wind Power,
- Sea Wave
- Energy Converter (SWEC)

### **2.2. Industrial hygiene and toxicology**

#### **Focus and objectives**

- 1) Digitalization to improve the health impacts and risks prevention and control.
- 2) Exposure and toxicity in relation to human health.
- 3) The production processes of biorefineries might generate new materials, both as a final product and as a by-product of the reaction.
- 4) Sex and gender are increasingly recognized as major influencing factors in diseases, as well as vulnerable populations.

### **1st Research Year Focus**

The main objective is to develop a roadmap to assess and quantify potential health and environmental-health related effects of biorefineries on workers and communities, looking at raw material, production processes, intermediate products of processing and final products.

## **2.3. Infectious diseases, emerging diseases and regional/global health emergencies**

### **Focus and objectives**

- 1) Define the contribution of the private sector to prevention and control measures of infectious diseases and pandemic preparedness ;
- 2) Investigate the leverage of digital health in this scenario;
- 3) Define a model for further integration for emergencies preparedness and response of the private sector and public health management systems at national and regional level;
- 4) Develop a research program that focuses on emergencies, including scenarios associated with the development of new forms of energy.

### **1st Research Year Focus**

- Collect and review the data available on the current literature regarding pandemic emergency response models, in order to size and detail companies' contribution, taking into account the scientific evidence and the major trends at the level international and multidisciplinary approaches such as one health;
- Review of current scientific literature and gray literature;
- Propose recommendations for actions.

## **2.4. Health and Social Health Models and Systems**

### **Focus and objectives**

- 1) Address the evolving trends and changes within and outside the health system, with key focus on the relationship between private and public health actors;
- 2) Digital health and telemedicine;
- 3) Mental health;
- 4) Identify a standardized set of indicators agreed across different departments which serve as basis for a global tracking and reporting system.

### **1st Research Year Focus**

- Define a new conceptual and operational model of synergy between the corporate health system and the National Health System (NHS) that considers the following elements:
  - The integration between General Practitioner (GP) and company competent physician;
  - Occupational medicine and company's health-welfare programs;
  - The contribution of digital and information technologies.
- Review of the literature on welfare models;
- Analysis of the weight of private consumption in the healthcare sector in Italy.

### **3. Methodology**

This first year research has been conducted through desktop analysis with large literature review in order to:

- Summarize and analyze previous research and theories on each area;
- Identify areas of accordance and controversy in research outcomes ;
- Identify gaps that may exist in research to date.

Extensive consultation among the authors themselves, as well as with Eni's functions, such as Health and Research & Development, has taken place.

Areas of attention for future steps have been identified, scientific papers with key results and recommendations will be published during the third quarter of 2022.

### **4. Future Research and Associated Work**

- 1) Publication on scientific journals of the results of the 4 areas of research;
- 2) Definition of the following years scope for the research based on the first-year Committee's recommendations;
- 3) Continue assessing the global and international trends in terms of global health and wellbeing;
- 4) Continue the dialogue and common efforts with the various stakeholders and international organizations such as WHO and WBCSD;
- 5) Launching a participative internal work with IOGP – IPIECA;
- 6) Continue improving the control of risks and impacts on health and maximize opportunities using the outcome of the research as well as reinforce it through HIA-ESHIA as fundamental tool to prevent the business impact on human health.