

IMPACTS ON HEALTH



Luis Eduardo Mejia Mejia
Director General
Instituto Nacional de Salud
Bogotá, Colombia



Climate change is a threat to the health of the Colombian people. Several of the expected impacts will have a direct or indirect impact on human health. Take, for example, the disappearance or reduction of ecosystems such as the páramos of Colombia; one might think this has no relation to or impact on human health. However, this disappearance or reduction may restrict access to water, with all the effects on health that this may cause.

Although there still is uncertainty about the magnitude of the global impact of climate change on human health, there is no question that negative local effects may be significant. This represents a challenge for the health systems of all countries, especially for those with greater vulnerability to climate change. These countries generally happen to be those that have contributed the least to greenhouse gas emissions, such as Colombia.

Therefore, we must begin a process of adaptation in health systems that will allow us to foresee and whenever possible limit the negative impacts of climate change on human health. We cannot afford to wait until all necessary evidence is available before beginning this process. In fact, Colombia already has evidence of the possible impacts of climate change on diseases such as malaria. Work performed by renowned universities, research groups, and institutions revealed a four- to eightfold increase in malaria transmission in Pacific coastal areas during the El Niño phenomena of 1994–95 and 1998. This increase in transmission during El Niño makes it possible to estimate the possible effects of this disease under a climate change scenario.

Increases in incidence are already being observed. In Colombia, malaria incidence during epidemic years increased from less than 15

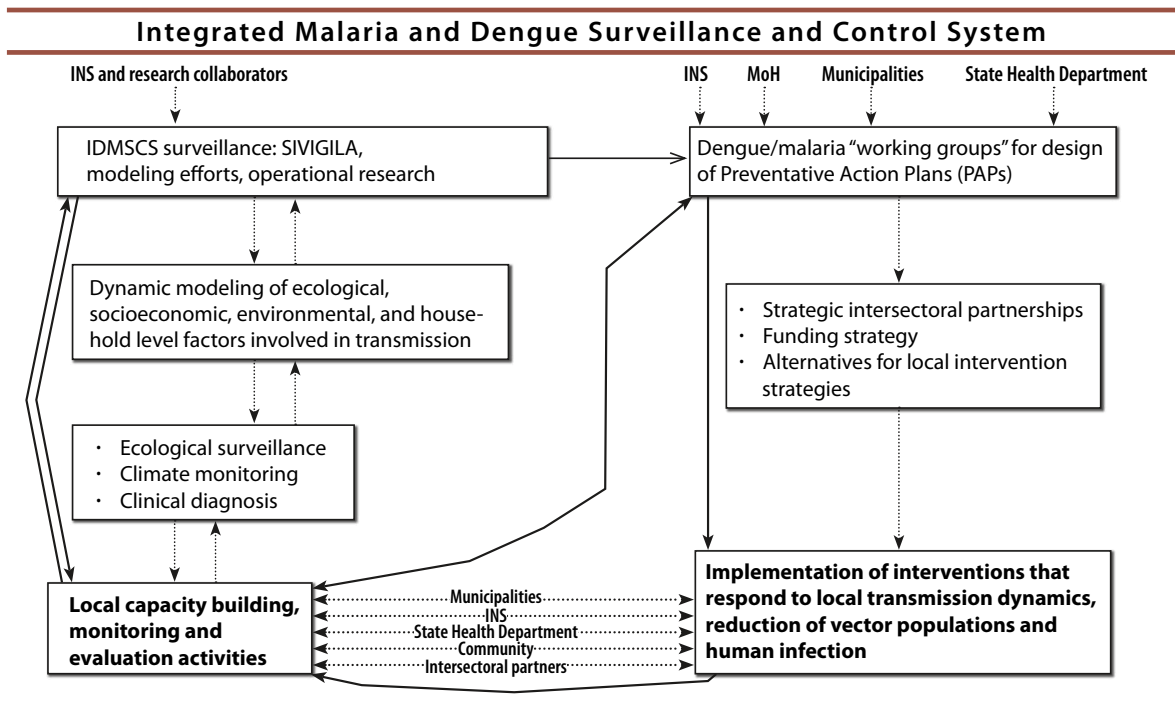
per 10,000 inhabitants in 1964 to 58 per 10,000 in 1983 and almost 156 per 10,000 inhabitants in 1998. The rate of dengue transmission has also shown an increasing trend, with a four-fold increase in cases from 1997 to 2002. In 2002, 81,831 Colombians fell ill to dengue and dengue hemorrhagic fever.

An adaptation measure that would provide great benefit and allow us to address, and in some cases prevent, the effects of climate change on human health is the strengthening of the public health surveillance and control system. In Colombia our aim is to incorporate system tools in public health surveillance that will allow us to determine thresholds of temperature or precipitation on which increases in the transmission of malaria and dengue are observed. With such tools, such as statistical modeling, we would be able to launch an early warning system based on climate variables. This would allow us to anticipate the occurrence of epidemics or outbreaks and to formulate preventive action plans, rather than contingency plans as currently occurs in most cases. Through the health component of the Integrated National Adaptation Project (INAP), we are piloting this approach in several Colombian municipalities (see *Box*, at right).

The task is a difficult one, because it requires important changes in the institutional schemes of the health sector and of other sectors involved and in the way in which the public health surveillance and control system is operated. However, Colombia is making headway in this direction. The challenge ahead is to expand the INAP to a national scale. It is also important for us to engage in joint research with other countries in order to determine with greater precision the effects of climate change on human health, thus decreasing uncertainty and enabling the identification of specific adaptation measures.

ADAPTING TO THE IMPACTS OF CLIMATE CHANGE ON HEALTH VIA THE INTEGRATED NATIONAL ADAPTATION PROJECT

Colombia's public health institutions have begun a strategic change to better cope with key threats related to the added risk from climate change. Colombia has adopted, with the support of the INAP project, a comprehensive effort to address the consequences of increased risks from dengue and malaria. The approach taken is summarized in the *Figure* below. The National Institute of Health (INS) is working toward the implementation of interventions that respond to local transmission dynamics, reduction of vector populations, and human infection. To such end INS, under the leadership of the Ministry of Health and in partnership with state and municipal health agencies, has developed working groups to design and implement pilot "Preventive Actions Plans." These actions plans are supported by: (a) applied research-oriented activities; (b) implementation of an integrated surveillance program encompassing ecological, climate, and clinical data; (c) design of an innovative and tailor-made early warning system to better focus scarce resources; (d) exploration of targeted actions in response to early warning signs; and (e) enhanced local capacity to include the community in response to warning events.



Some early successes have been achieved. The following preliminary results are here highlighted as they point out the validity of the approach taken and its potential to guide other countries and regions.

1. Identification of key epidemic amplification neighborhoods/areas in each pilot municipality will allow focusing mosquito control in small areas, increasing the effectiveness of the control measures, reducing resources, and increasing attention to surveillance.
2. Applied research activities will allow a better understanding of the many factors affecting the effectiveness of public health delivery systems. Such knowledge allows health managers to guide resources toward preventing actions that are not possible without specific local knowledge.
3. Well-defined experimental exercises are required to assess the effectiveness of new approaches to health delivery systems. Although efforts in Colombia to counter the negative impacts of climate change in malaria and dengue have produced very encouraging early results, it is too early to assess the new level of effectiveness achieved.
4. The challenge of implementing an applied research approach increases the commitment of those participating. Good communication of the project objective and its design among all participants has created a new sense of purpose, with an increased level of satisfaction among all involved. Only anecdotal evidence is available, but it is noticeable to those managing the program.