

## **Draft CEC PIER-EA Discussion Paper**

# **Environmental Justice**

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Plan Update

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## Environmental Justice

### Disclaimer

The purpose of this paper is to inform discussions among CEC staff, other state agency staff, non-governmental representatives, representatives of academia and other stakeholders regarding the state of the research on environmental justice in California. In particular, this discussion paper will identify gaps in our understanding and recommendations for future research initiatives with the end goal of supporting informed and systematic planning for climate change. Note that this discussion paper is not a research proposal and does not include recommendations regarding specific research projects.

### 1.0 Description of Research Topic

California strengthened its commitment to develop a comprehensive approach to address climate change through the Global Warming Solutions Act of 2006 (AB 32). By requiring in law a reduction in greenhouse gas (GHG) emissions to 1990 levels by 2020, it has set the stage for its transition to a cleaner energy future and put climate change on the national agenda spurring action by many other states.

As a result, the state is likely to be a model for the nation in terms of how to achieve reductions in ways that would continue to keep our economy viable and sustainable. Although the disproportionate impact of disasters linked to climate change on communities of color and the poor is of mounting concern to regulators, stakeholders, and the general public, information and data needed to develop effective strategies to ensure their well-being is not adequate. Research on the environmental justice implications of climate change—ranging from health effects to economic impacts—is still in its infancy. Therefore, it is imperative to dedicate resources to generate the needed critical inputs for forging correct climate change reduction and adaptation strategies in the state.

Hurricane Katrina and heat episodes in Chicago and France have revealed how extreme weather events, linked to climate change, have devastating impacts on low income communities. It is a documented fact that the magnitude of climate change impacts (e.g., acute, chronic, direct, indirect) is higher for low-income communities in all parts of the world. The magnitude of impacts seen in California during summer 2006 (one of the top five hottest years on record) is presented in the table below.

**Table 1-1. Impacts of Heat Wave During Summer of 2006 (July 15 to August 1)**

Excess deaths from all causes	615
Heat-related deaths (typical 10–12 deaths)	145
Excess ER visits	16,166
Heat-related ER visits (typical 400 visits)	2,537
Excess hospital admissions	1,182

Source: Preliminary results—California Department of Public Health [Year to be provided].

Such episodes are very likely to recur and continue (Climate Change Center, 2006) until global warming trends change, which will be dependent on actions taken at the local, state, national and international levels in the near future. Thus, low-income urban communities, as well as rural areas in the Central Valley that have higher percentages of residents of color, are most at risk from adverse effects of increased temperatures and heat waves, as they lack air-conditioning, capacity to travel from impacted areas for relief, and access to community-level programs.

Heat episodes are also known to increase the magnitude of air pollution and associated adverse impacts. According to the recent Draft Scoping Plan of the California Air Resources Board (CARB), by reducing GHG emissions to 1990 level, the estimated reduction of combustion-generated soot (PM 2.5) and oxides of nitrogen (a precursor to smog) is likely to be on the order of 10 and 50 tons, respectively, per day by 2020 (CARB, 2008). This reduction will translate to:

- 340 fewer premature deaths;
- 9,400 fewer cases of asthma-related and other lower respiratory symptoms;
- 780 fewer cases of acute bronchitis;
- 57,000 fewer work days lost; and
- 330,000 fewer restricted activity days.

However, it must be recognized that lower income populations are handicapped in (a) allocating the necessary resources to prepare their homes and themselves to avoid acute impacts of climate change, and (b) recovering from the aftermath of acute episodes because of lack of resources necessary to recuperate themselves and repair or rebuild their homes. Thus, it is as important to invest in adaptation programs as in emission reduction programs to help both the affected communities and the local governments cope with episodic impacts most likely to recur and continue due to global warming. The type of programs that need to be undertaken will differ significantly depending on the geographical location and the local needs of a community.

*Legal requirement*

Historically, U.S. and state regulations have focused on either reducing criteria pollutants (or their precursors) and toxics to improve the air quality at a regional level, or reducing the risk at the fence line from a source. The number of sources in a given

area is not typically a primary consideration in the permitting process; thus, there are many geographical areas generally referred to as “hot spots” with a high percentage of low-income and minority populations that are impacted by exposure to many chemicals from multiple nearby sources. Recognizing the likelihood of increasing disproportionate and cumulative impacts in such communities as a result of GHG emission reduction efforts, AB 32 requires that its regulations and compliance mechanisms:

- Do not disproportionately impact low-income communities;
- Consider the potential for direct, indirect and cumulative emission impacts in communities that are already impacted by air pollution;
- Prevent any increase in the emissions of toxics or criteria pollutants; and
- Direct public and private investment toward the most disadvantaged communities.

This language in the statute is a clear indication of the intent in terms of the need to focus on real-life conditions and consider exposure from multiple pollutants and facilities. It is also reflective of the fact that, although air quality has improved over time in a regional context, all communities may not necessarily experience the same level of improvement, as evidenced by recent risk assessments conducted by CARB. In addition, it is clear that no back sliding (i.e., no increase in pollution) should be allowed, and low-income communities must not only be protected but should benefit from the implementation of AB 32.

## **2.0 Summary of PIER Program Research to Date on Environmental Justice**

To date there has been no PIER program research conducted on environmental justice and climate change.

## **3.0 PIER Accomplishments**

The PIER program has no recorded results on environmental justice research.

## **4.0 Non-PIER Accomplishments in this Area and Opportunities for Collaboration**

Environmental justice studies have mostly focused on international equity issues. Rich and industrialized countries may be able to adapt given their economic resources but poor countries are ill equipped to defend themselves from extreme events generated by climate change. As most of the emissions in the atmosphere were generated by developed countries since the start of the industrial revolution, rich countries are responsible for most of the already observed climatic changes. However, the rapid growth occurring in China, India, and some other countries could change the relative contributions profile significantly over the next decade. A detailed review of the international literature on this issue and how low-income and minority groups are disproportionately affected in other parts of the world will be useful to predict impacts likely to occur in the state and also design future studies in collaboration with other countries for a better understanding.

## **5.0 Research Underway/Committed to via PIER Process**

The PIER program presently has only one research project underway related to environmental justice. This study involves the exploration of the potential impact of sea level rise on disadvantaged communities in the San Francisco Bay Area. The Pacific Institute is performing this study for PIER with a strong participation from the San Francisco Bay Conservation and Development Commission.

## **6.0 Gaps in Research/Knowledge Relevant to California**

Well recognized and accepted climate change impacts include increased incidence of heat waves, forest fires, early snow melts, flooding, and vector borne diseases, as well as extreme weather events (tornadoes, hurricanes, monsoon pattern and distribution). However, the geographical distribution and magnitude of these impacts likely to result and affect Californians have not been evaluated. This knowledge gap needs an urgent focus to ensure that future climate change protection policies will not have unintended consequences in some areas. In addition, the adaptation mechanisms will be very different to cope with different types of impacts (heat waves vs. flooding) that are likely to continue for the next decade or more, and will require a different pattern of distribution of resources for adaptation mechanisms.

Ecological damages resulting from climate change, such as increased forest fires or decreased availability of fish in rivers, also could have significant impacts on cultural values and living conditions of some Native American Indian tribes. However, there is no information available to ascertain the nature and extent of such changes likely to occur; further evaluation is needed.

As climate change protection policies are developed and implemented, the cost of energy is likely to increase significantly, and this could affect the life-style and quality of life for low-income and minority groups more than other population segments. Hence, it is important to evaluate this aspect in detail at the local, regional, and state levels to ensure that adequate resources will be allocated to avoid such differential impacts.

In addition, there are additional gaps in knowledge that must be addressed to meet Assembly Bill 32 (AB 32) requirements prior to the adoption of regulations and compliance mechanisms and options. These are described further in the next section.

## **7.0 Conclusions and Prioritized Recommendations**

### *Cumulative impacts screening method*

The California Environmental Protection Agency (Cal/EPA) defines cumulative impacts as “exposures, public health or environmental effects from the combined emissions and discharges, in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts will take into account sensitive populations and socio-economic factors, where applicable and to the extent data are available”. This definition was developed in consultation with the Cal/EPA’s EJ Advisory Committee and approved by the Interagency Working Group that includes the heads of all Boards and Departments of Cal/EPA and Director of the Office of Planning and Research (OPR).

Although AB 32 implementation requires the consideration and prevention of additional cumulative or localized impacts on already overburdened communities, currently there is no approved method to identify these communities. In order to meet the intent and requirements of the law, such a screening must be conducted prior to adoption of any AB 32 related regulation. Hence, there is an urgent need to develop and adopt a uniform and consistent method to conduct these screenings across the state.

This task can be accomplished by expanding the scope of an ongoing research project led by Dr. Manuel Pastor and jointly funded by ARB and CEC. The project is evaluating a Geographic Information Systems (GIS)-based screening approach that considers risk from both criteria and toxic pollutants, proximity to sources of pollution, and socioeconomic factors to evaluate community level impacts. A state-approved uniform screening method is also necessary to ensure consistency among air districts and cities that are developing their own additional measures to reduce GHG emissions and ensure protection for the same communities. In addition, such screening will be a valuable tool in the future for evaluating permitting, land-use, and growth pattern decisions made at local and regional levels.

#### *Localized impacts and co-pollutants*

In contrast to the above, there is neither definition nor consensus on the geographical scale at which these evaluations or screenings need to be undertaken to meet the intent and requirements of AB 32 related to localized impacts. It should be noted that localized impacts are not due to GHG emissions, but are mostly related to associated co-pollutant levels. The actual state of knowledge on this issue appears to be limited and needs further research to: (a) characterize, quantify and maximize co-benefits of pollutant reductions in existing or new “hot-spots;” (b) determine the geographical scale at which such evaluations can be undertaken based on the data available; and (c) identify and initiate collecting necessary data to improve future evaluations.

#### *Equity implications of climate change*

The solutions to reduce climate change impacts of GHG emissions will have to focus on remedial adaptation measures in the near-term and limiting the release of GHG emissions in the long-term by improving energy efficiency, expanding the use of alternate renewable sources of energy as well as trying to capture carbon. Unless properly designed, associated regulations and compliance mechanisms to bring about these changes could have a differential impact on some source sectors as well as population segments. Following is a short list of key research questions that must be answered with supporting data and evaluations to assist in selecting the right combination of regulations and strategies for equitable distribution of resources and environmental justice benefits:

- Which source sectors hold the most pollution reduction promise without economic disruption, both in terms of overall emission reductions and environmental justice/health benefits?
- Should greenlining be considered in impacted areas so that sources located in these areas are required to reduce emissions instead of participating in market-based compliance options? If so, how can these sources be provided with incentives to reduce emissions and provide environmental justice benefits?

- Recognizing the fact that climate impacts will continue and may even increase into the foreseeable future, how should resources be raised and allocated to adequately invest in adaptation measures that will assist the most impacted communities across the state?
- How can we uniformly ascertain social equity impacts of different GHG emission reduction strategies being considered at different levels (i.e., local, regional, state, national and international)—including command-and-control as well as market-based approaches (e.g., fees, cap and trade, auction, allowance)?
- How can a green economy be measured (scale, scope and indicators), and who enjoys the benefits of this transition? How should the associated disparities be mitigated?

This line of new research will require multidisciplinary approaches—spanning the fields of climate change science, epidemiology, public and environmental health, sociology, economics, GIS and statistical analyses—in order to provide answers to the above listed critical questions.

### **References**

[To be provided.]