

# Community adjustment

to **climate change** policy

**Prepared for the Pew Center on Global Climate Change**

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## Foreword *Eileen Claussen, President, Pew Center on Global Climate Change*

A Pew Center report series on the economics of climate change has identified many ways in which economic modeling can be improved to more reliably project the costs of greenhouse gas reduction policies. These studies show that better model design – for instance, more realistically portraying technological progress and flexibility in the economy – can yield substantially lower projections for the costs of addressing climate change. They provide strong evidence that a rational climate policy that sets realistic short-, medium-, and long-term goals can achieve significant environmental gains while minimizing economic costs.

At the same time, it is important to recognize that the costs of addressing climate change are likely to fall disproportionately on certain industries, communities, and workers, and to explore ways to minimize these adverse impacts. This report is one of three focusing of these critical transition issues. It draws from past community assistance efforts to recommend ways the government can best assist communities that may suffer economic disruption as a result of climate change policies. A report released simultaneously looks at potential impacts on American workers and a future Pew Center report will evaluate competitiveness issues.

In the case of community assistance, the government has considerable experience assisting communities adversely affected by policies such as trade agreements, defense downsizing, and forest protection. For this report, authors Judith Greenwald, Brandon Roberts, and Andrew Reamer apply lessons learned from previous adjustment programs to the challenges posed by addressing climate change. Specifically, the report examines the risks faced by communities whose economies rely heavily on energy production and energy-intensive industries. The authors conclude that a new federal adjustment program for at-risk communities should be part of U.S. climate change policy. The report recommends that the U.S. government take the following actions:

- Designate and fund the Economic Development Administration (E.D.A.) of the U.S. Department of Commerce to design and implement an economic adjustment program for communities;
- Identify and assist communities that are particularly dependent on energy-producing and energy-intensive sectors before dislocations occur;
- Leverage and integrate additional resources by involving multiple federal agencies and state and local governments through federal and regional task forces; and
- Be flexible in addressing community needs by supporting locally determined, comprehensive strategies for five to seven years after the implementation of new climate policies.

Clearly, some steps recommended in these reports will require funding. As policies to address climate change are developed, revenue streams from related fees (e.g., from permit fees or auction revenues) could be used to assist with these programs. Addressing climate change through sound policy will make it possible to achieve our environmental objectives while shielding workers and communities from potential economic harm. The authors and the Pew Center are indebted to Robert Atkinson, Ev Ehrlich, and Phil Singerman for their comments on previous drafts of this report.

## Executive Summary

The world is becoming increasingly concerned about the risks of global warming from the buildup of greenhouse gases in the atmosphere, but many American decision-makers are worried about the economic impacts of policies that may be needed to reduce U.S. greenhouse gas emissions. The overall size and distribution of the impacts of such policies are uncertain, and depend greatly upon how governments, businesses, consumers, and workers respond to the challenge. Efforts to avert global warming would put some American businesses, workers, and communities at risk of economic dislocation. This paper focuses on how the federal government can best assist at-risk communities. Since the burning of fossil fuels such as coal, oil, and natural gas to produce energy is a major source of greenhouse gas emissions, such communities include those with high reliance on jobs in energy production — say, coal mining in Wyoming, or oil and gas production in Louisiana — and in energy-intensive industries such as steel manufacturing in Pennsylvania.

This is not the first time that important national policies have forced economic change on particular communities. The same story has been told for trade agreements, defense downsizing, and forest protection, for example. In each case, the U.S. government helped affected communities through various forms of economic adjustment assistance. In addition, in the last 20 years, numerous U.S. communities have sought to adapt to wrenching economic change brought about by global competition and recession, both with and without federal assistance.

The United States has substantial infrastructure and experience at the federal, state, and local levels in community economic adjustment. Thus, a foundation is in place for creating a new government program to help communities adversely affected by global climate change policy. Experience in the United States and elsewhere suggests that, although economic adjustment programs do not usually remove the pain of economic disruption, appropriately designed programs can lessen that pain considerably. At the same time, there is substantial room for improvement in existing adjustment efforts.

This paper recommends a new federal adjustment program for communities as part of global climate change policy. Specifically, the United States should do the following: (1) commit to address the problem by designating a single agency, the Economic Development Administration (EDA) of the U.S. Department of Commerce, and authorizing about \$550 million dedicated dollars, to design and implement an economic adjustment program; (2) be proactive by identifying communities that are particularly dependent on energy-producing and energy-intensive sectors, and by helping communities to take action before dislocations occur;

(3) leverage and integrate additional resources by involving multiple federal agencies and state and local governments through federal and regional task forces; and (4) be flexible in addressing community needs by supporting locally determined, comprehensive strategies for five to seven years.

Such a program would take advantage of available experience and expertise at all levels of government, and would take into account the wide variability in local circumstances and opportunities. By doing so, it would minimize economic dislocation and maximize opportunities to create jobs and protect the environment.

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## I. Introduction

*Out of increasing concern about the risks of global warming due to the buildup of greenhouse gases in the atmosphere, in 1997 the world's nations negotiated the Kyoto Protocol to reduce the emission of such gases.* Implementation of the Protocol would require signatories to reduce greenhouse gas-emitting activities such as deforestation and fossil fuel combustion. However, the United States has not ratified that agreement, due largely to worries about the impact of compliance costs on American businesses, workers, and communities.

Considerable debate exists regarding the extent to which efforts to reduce greenhouse gas (GHG) emissions would cause economic dislocation in the United States. First, the economic costs of change are difficult to predict. Second, adoption of climate change policies will provide new business opportunities (e.g., renewable energy production) in response to altered demand. Third, history shows that the ingenuity of American businesses to adapt to changes in market circumstances should not be underestimated.

Despite these uncertainties, it is reasonable to assume that any effort to substantially change how the United States produces and uses energy will cause some degree of economic loss for: (1) specific businesses; (2) workers in those businesses; and (3) communities that depend on those businesses. Responsible federal policy would seek to anticipate and minimize these three kinds of negative impacts.

Particular economic adjustment policies and programs may address one or more of these categories. For example, under the business-focused (a.k.a. "sector-based") U.S. Department of Energy's (DOE's) Industries of the Future initiative, DOE and energy-intensive industries jointly conduct public and private energy-saving research. Under the worker-focused Clean Air Act Employment Transition Assistance Program (CAETA), the U.S. Department of Labor helps eastern coal miners displaced by the shift to lower-sulfur western coal. The Northwest Economic Adjustment Initiative (NWEAI), a federal interagency program, addressed the community impacts of the decline of the timber industry in the Pacific Northwest.

Negative impacts of economic transition are generally manifested sequentially: businesses are usually the first to feel the pain of economic decline, followed by their workers, and then the local communities where those workers live. Thus, successful sector-based programs may prevent economic dislocation for workers and communities.

This paper examines an appropriate role for the federal government in assisting communities that may face substantial economic loss due to climate change policies.<sup>1</sup> Such communities include those with

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high reliance on jobs in energy-producing industries (e.g., coal mining in West Virginia, oil and gas production in Louisiana); energy-intensive industries (e.g., steel manufacturing in Pennsylvania); and industries that make energy-consuming products (e.g., auto manufacturing in Michigan).

An initiative to help communities adjust to the impacts of climate change policy must be assessed in light of the existing network of assistance in the United States, and lessons learned from adjustment experiences, both here and abroad. In the last 20 years, numerous U.S. communities have sought to adapt to wrenching economic change brought about by global competition, defense downsizing, and recession. In response, the federal government has taken an active role in assisting communities facing economic loss. In recent years, Congress has authorized community adjustment programs in instances of economic dislocation due to trade policy, military base closings, and industrial restructuring. As a result, significant institutional capacity and a wide body of experience for addressing economic change now exist at the local, state, and federal levels. Moreover, reliance on federal adjustment programs reflects widespread agreement regarding the appropriateness of a federal role in facilitating economic adjustment. National programs that assist community economic adjustment can be found in most developed countries across the world. Based on the U.S. and foreign experience in economic adjustment, extensive knowledge is available that provides insights on program design and outcomes.

+ This paper leaves to others discussion of federal adjustment programs for workers and businesses.<sup>2</sup> However, it is important to recognize that any such programs will provide important context for a federal adjustment program for communities. Further, any federal effort to promote the creation of new industries (e.g., renewable energy) or the transformation of existing industries will influence the operation of a community-based adjustment program as well.

+ This paper also does not address the broader question of the appropriate role of the federal government in promoting economic development generally. The federal government sponsors numerous economic development programs (e.g., in Commerce, Treasury, Agriculture, and Housing and Urban Development) not designed to facilitate adjustment to economic dislocation *per se*. Such programs do provide valuable resources for local responses to economic dislocation, however, and so will be taken as context for the overarching purpose of this paper — ascertaining an appropriate role for the federal government in facilitating community adjustment, as needed, to global climate change policies.

In reading this paper, one should keep in mind that, one way or another, climate change will bring about economic change. If climate change is not slowed, an increasingly warmer planet will have major impacts on businesses, workers, and communities<sup>3</sup> — some positive, some negative, as with climate change policy. Thus, whether or not action is taken to prevent climate change, the U.S. government likely will find itself in some future year in the position of designing a climate-related community-based adjustment effort.

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This report recommends a federal approach to community assistance based on lessons learned from a review of 26 community-based adjustment programs from around the nation and the world, and from an examination of factors that influence the ability of communities to adjust to dislocation. Chapter II summarizes current thinking about possible economic and community impacts of climate change policy. Chapter III describes the authors' research and approach to the analysis. Chapter IV identifies local factors that influence the ability of a community to adjust to economic dislocation. Chapter V identifies good principles for design and management of national adjustment programs. Chapters VI and VII provide recommendations on how the United States might best design and implement an economic adjustment program for communities affected by climate change policy.

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## II. Communities and Climate Change

*Although the magnitude of economic impacts due to climate change policy are uncertain, certain industries, and the communities that are highly dependent on those industries, are at risk.*

### A. National Impacts

*Whether or not the Kyoto Protocol is ratified, there is a good chance that at some point international and domestic actions will take place to reduce greenhouse gases, including carbon dioxide (CO<sub>2</sub>).* The size of the national impact of climate policy is uncertain, and depends upon how governments, businesses, consumers, and workers respond to the challenge.<sup>4</sup>

To reduce GHG emissions, fossil fuel producers would need to produce — and consumers would need to use — less coal, oil, and perhaps natural gas. (The role of natural gas is complicated because it is far less CO<sub>2</sub>-intensive than the other fossil fuels, but it still emits some CO<sub>2</sub>.<sup>5</sup>) Businesses that emit substantial amounts of carbon dioxide would have to shift energy sources, become more efficient, cut production, shut down, or buy excess emission reductions from other emitters. Consumers would have to buy more efficient cars or refrigerators, pay higher electricity and gasoline bills, and/or change their consumption habits. As consumer demand for more efficient products rises, businesses would likely provide more energy-efficient products and services.

Changes in patterns of energy production and consumption could affect workers and businesses in the following ways: clearly identifiable job losses in oil production and coal mining (and perhaps natural gas production) directly related to reduced demand; potential job losses in industries that are energy-intensive or that produce energy-consuming products, which may become less competitive as a result of rising energy prices; jobs created in efficiency and alternative energy (and perhaps natural gas) businesses; and diffuse job impacts throughout the economy as a result of changes in gross domestic product (GDP).

### B. Industry Impacts

*Even if the net economic impact of climate change policy is positive, employers in certain industries will experience losses.* The energy production and transformation industries are at greatest risk. Several analyses indicate that coal mining is likely to be hardest

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hit, followed by electric utilities, petroleum refining, natural gas, gas utilities, and crude petroleum.<sup>6</sup> Pipeline companies, railroads, and other industries that are particularly dependent on the energy industries may feel significant secondary effects.<sup>7</sup>

Energy-intensive manufacturing industries are at risk of significant price increases that depress domestic demand and encourage imports. Such industries include aluminum, cement, chemicals, paper, petroleum refining, steel, metallurgical products other than steel, lime, iron and ferroalloy ores, and fertilizers.

Some trade-sensitive industries are also at risk, such as those producing household audio and video equipment, apparel, rubber and plastic footwear, leather footwear, and other leather goods.<sup>8</sup> While price increases for these goods are likely to be less severe than price increases for energy-intensive goods, trade-sensitive industries are in fiercer competition with developing countries, which do not face binding commitments under the Kyoto Protocol. Developing countries already supply the majority of the U.S. imports in these markets, and could expand their market penetration further.

A literature review did not reveal significant projected impacts on the U.S. auto industry from climate change policy; most analyses either assume or conclude that the bulk of the required GHG reductions will be made in sectors other than transportation. However, U.S. auto companies currently make their largest profits selling the least energy-efficient vehicles on the market, and Japanese manufacturers now have the lead in bringing alternative fuel vehicles to market.<sup>9</sup> Thus, if climate policy were to affect transportation, and the U.S. auto industry failed to respond adequately, it could lose market share. On the other hand, the production of energy-efficient cars appears to require more workers per car, so climate policy could increase auto industry employment.<sup>10</sup>

*Despite these vulnerabilities, these industries do have some control over their destiny.* The energy production and transformation industries could diversify into other businesses, improve the efficiency of their operations, or take advantage of opportunities afforded by an international climate agreement to purchase emission reductions overseas. The auto, energy-intensive, and trade-sensitive industries are unlikely to passively take losses. Although they are now dependent on fossil fuels, they are not *necessarily* dependent on fossil fuels. These industries can substitute gas for coal, for example; and nuclear, hydropower, geothermal, solar, and wind for coal, oil, and gas. They can also reduce fossil fuel consumption by substituting materials, labor, and capital for energy inputs (e.g., installing automation and process control equipment), and more energy-efficient vehicles, lighting, cooling, heating, production, and computing equipment for their less efficient counterparts.<sup>11</sup> Also, these companies likely would pursue technological innovation in energy efficiency and alternative fuels. Anticipating changes in markets due to climate change, several energy-intensive industries are already working, for example, through DOE's Industries of the Future program to develop new, more energy-efficient processes.

*Job losses in vulnerable industries are already occurring, independent of climate change policy.* Employment in energy-producing and energy-intensive industries (such as aluminum, cement, pulp and paper, steel, oil refining and chemicals) and the auto industry is already flat or declining as productivity improvements or increasing imports outpace growth. Fossil-fuel and energy-intensive industries account for about 4 percent of the total labor force, and that share is declining.<sup>12</sup>

### C. Community Impacts

*There is little information on the community-specific impacts of climate change policy.* Several studies forecast state-level impacts of climate change policy, but these estimates are even more uncertain than the already highly uncertain estimates of national impacts.<sup>13</sup>

There is almost no analysis of community-level impacts. However, one can glean from the literature a sense of which types of communities are vulnerable and, in some cases, in which states these communities are concentrated.<sup>14</sup> Note that many communities vulnerable to climate change policies are also vulnerable as the U.S. economy continues to shift away from dependence on natural resource and manufacturing industries and towards service-producing and knowledge-based ones. It will be difficult to distinguish the impacts of climate change policy on these industries from the economic forces driving globalization and the information economy.

+ In addition, it should be kept in mind that although certain communities are at risk, market forces may guide effective adjustment. Any community-level impacts will be lessened to the extent that businesses and workers respond creatively. Workers with skills transferable to growing industries will likely find work. Energy-intensive industries can aggressively seek to reduce their energy use. Community leaders can develop creative strategies for facilitating adjustment to new economic circumstances, as will be discussed in Chapter IV.

+ *Coal mining communities will be affected, but many of them are already in decline for other reasons.* Many models forecast that CO<sub>2</sub> controls would lead to cuts in coal mining employment of 50 percent or more relative to the base case forecast, which predicts a 38 percent decline by 2010. Thus, climate policy would represent a substantial hit to a dwindling base. Eastern coal mining communities have been losing jobs for decades.<sup>15</sup> Although many Appalachian communities are attracting jobs in high-paying, growing industries, the region still contains some of the poorest areas in the nation that have not recovered fully from the economic restructuring in the 1980s and the continually diminishing employment opportunities in mining and heavy manufacturing.<sup>16</sup>

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The U.S. coal industry is shifting from high-sulfur eastern coal production to low-sulfur and less unionized western coal production.<sup>17</sup> Interestingly, and somewhat ironically, the western coal region that experienced the greatest recent increases in production is likely to be the most severely affected by climate policy. The west depends on energy-intensive, long-distance rail transportation to reach its markets in locations up to 2,000 miles away, and western coal has a relatively high ratio of carbon to energy content.

*Oil- and gas-dependent communities may be vulnerable.* The petroleum industry is divided into two sectors: the “upstream” sector, which involves finding and producing crude oil, and the “downstream” sector, which involves refining crude oil into petroleum products and marketing those products to end users. The upstream oil industry is closely integrated with the upstream gas industry. One analysis, while arguing that an innovation-led climate strategy would be beneficial to U.S. manufacturing and to the U.S. economy overall, projects significant job losses in both sectors.<sup>18</sup>

Employment in the upstream oil and gas industry has been declining for decades,<sup>19</sup> although an increase in natural gas drilling has slowed the decline in oil production employment to some extent.<sup>20</sup> From a regional perspective, the question of whether future gains in gas production will offset losses in oil production is quite significant. The vulnerability of oil-dependent communities to climate policy also depends partly on the age and size of their facilities.<sup>21</sup>

For the downstream oil sector (i.e., refining), the picture is clearer but more pessimistic. Oil refining jobs have been declining for some time and are expected to decline further under climate change policy, although impacts are expected to vary by region.<sup>22</sup>

Communities where oil and gas company headquarters are located may be hurt by cutbacks in drilling operations. In Tulsa, Oklahoma, however, the relatively high proportion of technology workers effectively adjusted to economic change by shifting to advanced technology industries.<sup>23</sup>

*Communities dependent on energy-intensive industries or producers of energy-consuming products may be vulnerable.* Vulnerability will vary by community. For communities dependent on energy-intensive industries, such as Detroit and Indianapolis, and rural communities that have recently attracted auto plants, vulnerability will depend on several factors. These include the size of the community, how dependent local facilities are on fossil fuels, and how economically competitive these facilities are.<sup>24</sup> In communities dependent upon automobile manufacturing, impacts will depend upon the extent to which climate policies focus on transportation, and the ability of automakers to produce energy-efficient cars or cars that use alternative fuels.

## D. Implications for Federal Policy: Some Communities are at Risk

More research is needed to pinpoint which communities will be hurt by climate policy, and the extent to which they will be hurt. Yet it is clear that some industries are at risk, some communities depend on those industries, and therefore some communities are at risk of economic harm due to the implementation of climate change policy. This harm can take numerous forms, including unemployment, underemployment, earnings loss, reduction in home values, out-migration, decline in tax revenues, and decay in physical infrastructure. As such dislocation will result from federal policy, it is appropriate to assess the role the federal government could play to assist communities in effectively adjusting to change.<sup>25</sup> The methodology for conducting this assessment is described in the next chapter.

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### III. Approach to Analysis

*The authors examined 26 community-focused adjustment programs to identify program design options and ascertain lessons learned.* To determine the nature of an appropriate, effective federal response to climate-related economic dislocation, the authors reviewed a wide range of community-based economic adjustment programs. They sought to identify the range of models and options for community-based adjustment programs, and the relative strengths and weaknesses of each. They also aimed to identify the factors that affect economic adjustment by communities.

Twenty-six programs sponsored by federal, state, local, and foreign national governments were chosen for a first round of examination; of these, eight were selected for in-depth review. For these eight, the authors examined program materials, evaluations, and other literature; and conducted interviews with current or former program personnel.<sup>26</sup>

The authors reviewed only those programs created to support communities in addressing a substantial decline in local economic activity. Causes included plant shutdowns due to increased imports, plant relocations offshore, depletion of natural resources, military base closings, and natural disasters. Programs that focus on general economic development, not economic decline *per se*, were excluded from the analysis.<sup>27</sup>

The authors sought to examine a group that was diverse in a variety of dimensions, including nation of origin, governmental level of sponsorship (e.g., national, state, or local), problem definition (including the role, if any, of government policy in creating the problem), and approach to the solution. Of the 26 cases, 18 were nationally sponsored programs (nine U.S., nine foreign or multinational), three examined U.S.-based state efforts, four focused on U.S.-based local efforts, and one concerned a local effort in a foreign country. Of the eight in-depth reviews, six were nationally sponsored programs (four U.S., two foreign), one examined a state effort, and one examined local efforts. The cases are described briefly in Table 1, and three illustrative cases are described in somewhat fuller detail in the Appendix.

Table 1

Summary of Reviewed **Economic Adjustment Programs**

U.S. Federal Programs

Program	Problem	Eligibility	Nature and Level of Assistance
Economic Adjustment Program, Economic Development Administration (EDA), U.S. Department of Commerce*	Sudden and severe economic dislocation from any cause	Documented economic dislocation	Funding for planning (average \$200K) and implementation of projects (average \$1 million) justified by the plan; FY 2000 budget: \$110 million
U.S. Community Adjustment and Investment Program (USCAIP), U.S. Department of the Treasury	Significant job losses due to implementation of the North American Free Trade Agreement (NAFTA)	U.S. border counties automatically eligible; other areas eligible if they have high unemployment rate and significant job loss due to NAFTA	Direct loans and loan guarantees to businesses to create jobs and direct grants to support specific projects and provide technical assistance; federal commitment: \$43 million since 1997
Office of Economic Adjustment (OEA), U.S. Department of Defense (DoD)	Loss of military-supported jobs and income	Communities identified by DoD for military base closure or realignment	Planning grants and staff assistance; FY 2000 budget: \$22 million, down from a high of \$58 million in 1996
MARITECH, U.S. Department of Defense	Economic decline of U.S. shipyards	All major shipyards included	Encouraging and assisting the industry's expansion into the international commercial market; funding: \$220 million over five years
Nuclear Cities Initiative (NCI), U.S. Department of Energy (DOE)	Severe economic dislocation due to Russian defense downsizing	The program specifies inclusion of all 10 of the remote, formerly secret, "nuclear cities" historically dependent on nuclear weapons R&D facilities	Training, creation of new businesses and institutions, infrastructure improvements, etc.; FY 2000 funding: \$7.5 million
Office of Worker and Community Transition (OWCT), U.S. Department of Energy (DOE)	Workers and communities affected by defense downsizing	Location near DOE nuclear weapons installations	Planning and implementation grants to set up training and economic diversification programs; FY 1997 budget for community assistance: \$40 million
Northwest Economic Adjustment Initiative (NWEAI)*	Economic dislocation caused by conflict over the northern spotted owl	Federal government specified the eligible area based on timber dependence	Various forms of technical and financial assistance (e.g., Jobs in the Woods); federal commitment: \$1.2 billion over 5 years
Economic Action Programs (EAP), U.S. Forest Service	Decline of forestry	Forest-dependent rural communities	Assistance in finding funding, forest management, and development planning; FY 1999 funding: \$8 million
Managing Change in Agriculture, U.S. Department of Agriculture (USDA)	Rapid change in the agricultural sector	Communities dependent on agriculture	Educational programs focused on strategic thinking and decision-making

Foreign Programs

Program	Problem	Eligibility	Nature and Level of Assistance
England's Coalfield Communities Initiative (CCI)	Economic decline and stagnation of England's coalfield communities	Local and national staff identify potential areas of need	Direction of a greater share of resources to coalfield areas; proposed budget: \$500 million over 3 years
Regional Development Program: Support for Declining Industrial Regions (Objective 2), European Union (EU)	Structural economic decline	Eligible areas jointly designated by the EU and the EU member on the basis of inadequate levels of employment and poor net job creation	Grants for planning and infrastructure development, assistance to small and medium enterprises (SMEs), technical assistance, and skills training; allocation for current seven-year period for Objectives 2 and 5b (see below): \$20 billion
RECHAR, European Union	Economic decline in coalfield communities	Communities with loss or planned loss of 1,000 coal mining jobs since 1990	Same as Objective 2; funding averaged \$100 million annually
Regional Development Program: Support for Declining Agricultural Regions (Objective 5b), European Union	Structural changes in agriculture	Areas that are unable to generate new employment opportunities as jobs decline in agriculture	Similar to Objective 2; assistance intended to help diversify economic activity outside agriculture, particularly tourism and small and medium-sized businesses
Support to Economies in Transition, Organization for Economic Cooperation and Development (OECD)	Transition to market economies	Countries in Eastern Europe and the Newly Independent States of the Soviet Union	Strategic consulting and facilitation of policy dialogues; 1999 budget: \$25 million (US)

**Foreign Programs** *continued*

Program	Problem	Eligibility	Nature and Level of Assistance
Vietnam VACVINA	Agricultural decline	Rural communities	Technical assistance, farmer-to-farmer training, assistance in obtaining credit and facilitating cooperative local processing and marketing to restore and update an integrated system of horticulture
Finland restructuring policy for mining communities in the 1980s	Mine closures	Communities suffering mine closures	Investment aid, start-up labor grants, advantageous loans, and tax relief; funding: about \$40 million (US)
The local response of Vuohijarvi, a Finnish mill community to mill closure	Mill closure	N/A	Local mill managers and provincial development company restarted the mill; municipality revitalized housing market
Development of community-based rural tourism in Ireland	Decline of agriculture	Communities with local tourism cooperatives	National cooperative formed for the promotion of rural community tourism in Ireland; Irish federal assistance of about \$350,000 (US) over 5 years
Canadian Fisheries Adjustment and Restructuring Initiative (CFAR)*	Restructuring of Canadian fisheries	Federal government designated those communities historically dependent on fisheries	Matches wide variety of economic development tools with locally determined needs; funding: \$1.13 billion (CA) over 3 to 5 years

**U.S. State & Local Programs**

Program	Problem	Participation	Nature and Level of Assistance
Industry Networks: Northwest Wood Products Association	Economic decline in wood products industry	80 wood product firms in Oregon, California, Washington, Idaho, Montana, and Canada participate	Helps firms with marketing, training and technology, capital access, supply development, and general member services, including pooled insurance; \$750,000 annual grant from State of Oregon initially
Industrial Action Projects (IAPs), Massachusetts Industrial Services Program (ISP)	Large-scale manufacturing job losses	Project-by-project basis; key industries such as machines and needle trades have participated	Cooperative marketing and labor force initiatives, high-risk loan fund, and reemployment assistance program; annual budget: \$200,000 to \$350,000
State efforts to replace lost manufacturing jobs through technology-led development	Large-scale manufacturing layoffs and plant closings in the 1980s	Examples are regional Ben Franklin Partnerships in Pennsylvania and New York State's Centers for Advanced Technology	Technology-focused programs (e.g., technology development networks, university-industry R&D centers, business incubators, technology transfer and commercialization, providing access to capital)
Communities responding to economic decline within key industries	Economic decline within key industries	Examples include fisheries assistance in Wiscasset, Maine; garment industry assistance in New York	Targeted loan funds, business technical assistance, worker training and employment services, market export assistance, supplier linkages, etc.
Local efforts to replace lost manufacturing jobs with new industries	Loss of traditional manufacturing jobs	Examples include a biomedical research foundation in Shreveport, Louisiana in response to oil and gas job losses	Creation or expansion of local R&D activity, technology transfer and commercialization, and new organizations; use of local, reasonably priced (often abandoned) assets
Pittsburgh revitalization	Decline of the steel industry in the 1980s	Focused on Pittsburgh but also some efforts to revitalize surrounding mill towns through community-based development corporations	Infrastructure development projects, venture capital funds, small business incubators, grants to manufacturers, CEO network, etc.; \$70 million from state, at least \$114 million from universities and \$460 million from the private sector
Cleveland revitalization	Decline of manufacturing base	N/A. Business leaders formed Cleveland Tomorrow, spun off independent organizations to run major initiatives	\$100 million for-profit venture capital fund, labor-management partnership to improve quality; university-based tech transfer centers; received \$103.3 million in federal funds over 7 years

\*See Appendix for details.

## IV. Economic Adjustment: Lessons Learned at the Community Level

*Certain characteristics influence the ability of communities to adjust to economic distress.* The authors' research shows that the ability of communities to adjust to economic dislocation is a function of four factors:

1. *Strength and diversity of the economy.* When one important sector declines, are there others that are stable or growing? Does the declining sector have the ability to rebound?
2. *Nature of economic assets.* Does the community have the assets (e.g., workforce skills, entrepreneurial tendencies, physical infrastructure, quality of life) to grow in new directions?
3. *Ability of community members to manage adjustment.* Does the community have the civic institutions, leadership, and attitude that will allow it to let go of the past and embrace the future, uncertain as that may be?
4. *Effectiveness of economic development institutions in strategic planning and implementation.* Does the community have the capacity to manage a thoughtful economic adjustment process effectively?

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### A. Strength and Diversity of the Economy

The ability of a community to rebound from economic loss in a key industry depends partly on the size and strength of other local industries that are not affected, as well as the ability of the dislocated industry to become competitive again. For example, in the mid-to-late 1980s, the economy of the Colorado Front Range (Fort Collins south through Denver to Colorado Springs) was hit hard by declines in natural resource extraction industries. The region also was home to a large telecommunications industry, including leading cable television firms, U.S. West, large telecom equipment plants, and many small companies developing new products and services. In the 1990s, this telecommunications industry grew into a broad, diverse information technology industry. California-based information technology firms established manufacturing plants and service centers across the Front Range. The area became the center of the commercial satellite industry and a new, robust software industry developed. The telecommunications industry provided the foundation for the region's economic turnaround.

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In the 1980s, the U.S. auto industry was rocked by Japanese imports and a major recession. Between 1978 and 1982, the number of auto production workers fell by more than one-third. Many communities suffered. For instance, automobile manufacturing employment in Fort Wayne, Indiana fell from 15,700 workers in 1978 to 8,100 in 1982. But as U.S. auto manufacturers learned how to design and build more competitive cars, auto employment in Fort Wayne reached 12,800 in 1999, the highest figure since 1979. Some restructured industries have the capacity to rebound, and bring along communities dependent on them, though a rebound might take time.

## B. Nature of Economic Assets

In the aftermath of dislocation, the nature of a community's assets (e.g., workforce, entrepreneurial base, physical infrastructure, and quality of life) dictates the type of economy that can develop. Of particular importance are the extent to which dislocated workers have skills needed by other industries, the vitality of the entrepreneurial base, the availability of other assets important to business operations (such as capital), and the community's quality of life.

*Transferability of workforce skills to growing industries.* Perhaps the most important factor influencing the economic adjustment process is the extent to which dislocated workers can transfer their skills and abilities to new industries. In today's knowledge-based economy, it can be difficult for workers whose chief asset is a strong back and quick hands to find jobs equivalent to the ones they left behind.

The contrast between two communities that quickly adjusted to major layoffs and two that did not illustrates the point. For years, the economy of Rochester, New York depended on two major employers, Kodak and Xerox. Due to international competition, both companies have been forced to lay off workers. In recent years, the number of Kodak workers fell from 60,000 to 25,000. But area unemployment today is only 4 percent, and the number of jobs has reached a record high. This is because many laid-off workers performed administrative, research, and support functions easily transferable to other firms.<sup>28</sup>

In the 1980s, Tulsa, Oklahoma was hurt by a massive decline in oil and gas industries. Many workers were laid off. Today, Tulsa has become a center of information technology activity. Employment is now a third higher than it was in 1987. Why? Some firms shifted their emphasis from transporting gas to laying fiber optic cable through their rights-of-way. Also, many laid-off workers had performed information technology functions and were able to start their own firms.<sup>29</sup>

In contrast, communities whose wealth has been highly dependent on physical labor have had much more difficulty adjusting. In the 1980s, the Pittsburgh metro area was rocked by massive losses in the steel industry. Hardest hit were the mill towns outside the city. While the number of jobs in the metro

area has grown in recent years, most do not pay the same as the lost unionized factory jobs. Regional population has declined for 20 years straight. The city of Pittsburgh, once the tenth largest in the country, is now 49<sup>th</sup>.

A half-century ago, areas reliant on manufacturing could find new goods-producing sectors to bring in when the old ones left. For instance, in the 1950s and 60s, Rhode Island was able to rebound from the devastation wrought by the movement of textile mills south by becoming home to many small costume jewelry and plastics firms. But such transformations are difficult today. Since the late 1980s, Rhode Island lost 40 percent of its manufacturing jobs. While other sectors have grown, the total employment is 5 percent below that of 15 years ago.

*Vitality of the entrepreneurial base.* In communities suffering from economic dislocation, adjustment is quickened if new businesses can be created.<sup>30</sup> The extent to which entrepreneurship speeds adjustment depends upon workforce aptitude and attitude.

Communities with a small pool of workers with higher education, management skills, and sophisticated knowledge will not be hotbeds of entrepreneurship. For example, entrepreneurship-led adjustment may not be a viable adjustment option for many mining communities.

Dislocated communities may have residents with the requisite education and knowledge, but not a risk-taking attitude. Such communities include those highly dependent on large organizations (e.g., the federal government, steel companies). Few new businesses have been started in Rochester by laid-off workers accustomed to working in the corporate environment of Kodak or Xerox. On the other hand, new business development has been an important factor in the revival of Tulsa. The region was composed of a large number of smaller firms, and entrepreneurship and risk-taking are an important part of the oil and gas culture. Similarly, the chances of economic adjustment in Canadian fishing towns is improved somewhat by the fact that fishermen are entrepreneurs.

*Nature of a community's non-workforce assets.* A community's non-workforce assets can have a significant influence on its ability to adjust to dislocation. These assets include institutions of higher education, physical infrastructure (e.g., roads, airports, buildings, industrial parks), telecommunications infrastructure, land, and financial capital.

The economically depressed mill town of North Adams, Massachusetts is benefiting from its proximity to Williams College. Williams graduates are moving to North Adams to establish advanced technology businesses, creating jobs, and filling vacant buildings downtown. This new technology cluster has revitalized the town.<sup>31</sup>

The Providence, Rhode Island economy has finally returned to health largely because of its proximity to – and lower cost of living than – Boston. Workers are moving to Providence and commuting to Boston, technology startups and back office operations have come to town, an arts community has developed, and the downtown has revived. When the Department of Defense downsized Strategic Air Command operations in Omaha, Nebraska, the city used the advanced telecommunications infrastructure built by the government to become a thriving home of customer call centers.

The availability of financial capital can be an important determinant of a community's ability to adjust, particularly when that adjustment relies on entrepreneurial activity. Investments of local merchants and residents spurred the transition of Kimberly, British Columbia from a mining to tourist town.

However, when adjustment is based more on non-workforce assets than on the skills of dislocated workers, some workers can be left behind. Factory workers in North Adams and Providence have not fully shared in recent economic good times. In the early 1990s, Rhode Island suffered from an exodus of working class men seeking jobs that fit their skills.

*Quality of life.* In part, adjustment depends on the region's quality of life—the sense of community and the public amenities available for recreation and entertainment. Areas with a high quality of life can attract new workers and industries to revive a moribund economy, as well as retain existing residents. While the Colorado Front Range economy was devastated by the oil and gas downturn of the 1980s, it rebounded in no small part because of its excellent recreational amenities, an attraction to high tech workers and tourists. North Adams can keep young technology entrepreneurs because of the physical beauty of the Berkshires. Rochester held onto its laid-off workers because of their sense of community and attachment to the community. The Cleveland area has shifted from decline to growth in part because of efforts to revitalize the downtown.

However, quality of life is usually helpful only in combination with other assets, such as workforce skills. The older residents of the mill towns in the Pittsburgh area have a strong attachment to community, but these areas are unable to attract new economic activity.

### C. Ability of Community Members to Manage Adjustment

Relationships among community members and attitudes of community leaders influence the outcome of adjustment programs to a large degree. Of particular importance are the quality of civic institutions and their leadership, and community attitudes toward change.

*Quality of civic institutions and leadership.* Civic institutions include local governments, regional non-profit organizations focused on such issues as improving community welfare (e.g., United Way), and



collaborative economic development and business institutions (e.g., chambers of commerce, public-private partnerships, industry councils). The breadth, leadership, and effectiveness of these institutions can play a major role in a community's ability to turn itself around. Success often depends on the ability of these organizations to encourage cooperation among competing constituencies (e.g., cities and suburbs, management and labor, different races, competing firms).

In the late 1970s, Cleveland faced fiscal and economic disaster. With the migration of many white Cleveland residents to the suburbs, the permanent shedding of thousands of manufacturing jobs, a recession, major tensions between unions and management, municipal ineffectiveness and loan default, and the national nickname of "Mistake on the Lake," residents thought the city and the region had hit "bottom." Leading members of the Cleveland business community decided it was time to take action. According to one, business activism was "fueled by our disappointment with certain aspects of our city administration, our growing concern about the image Cleveland had nationally and internationally, and the impact of that image on how people might feel about joining our companies or relocating to Cleveland."<sup>32</sup>

Two major events took place. First, the new mayor began to collaborate with the City Council, which enabled action. Second, the top executives of the city's major corporations formed the non-profit Cleveland Tomorrow to fill the vacuum in economic development leadership. Cleveland Tomorrow has provided the region with the civic infrastructure to move forward by creating and spinning off new non-profits to address difficulties in union-management relations, race relations, lack of capital, and a moribund downtown. While the turnaround of the Cleveland economy has been difficult, largely because of the lack of transferability of dislocated worker skills to new industry, leadership and civic institutions have put Cleveland on a new path. The Cleveland story demonstrates that if market forces do not allow a relatively quick adjustment from economic downturn, "civic entrepreneurship" is an absolute necessity.

*Community attitude towards change.* The extent to which a community accepts the realities of industry restructuring increases its ability to adjust to change. Residents may have such a strong emotional attachment to the lost industry – and a fear of change – that they will not tackle their economic problems head on. Such attitudes are particularly common in communities entirely dependent on one industry, where the jobs and the way of life are intricately entwined.

The steel towns in the Monongahela River Valley outside Pittsburgh have had great difficulties adjusting to new economic realities. According to observers, residents have been more invested in re-creating the past than in moving into the future. These attitudes are understandable because the steel mills were not only a way of making a living, they were a way of life — and the only life that many residents knew. The result was an enormous resistance to accepting the loss and to change. "Magical thinking" that steel would return has proved an impediment to moving forward.

## D. Effectiveness of Economic Development Institutions

When markets do not allow an easy adjustment, civic entrepreneurs need a thoughtful, realistic strategic plan to guide their actions. They also require economic development staff and volunteers to implement that plan effectively, and commitment to a long-term process.

*Ability to create a realistic, achievable strategic plan for the community.* In the absence of immediately favorable market forces, successful adjustment requires a vision of what the community can be and a roadmap for getting there. Developing the vision and roadmap in turn requires:

- Staff skilled in strategic planning;
- Widespread participation of political, business, and social leaders and commitment to help implement a roadmap collaboratively;
- Honest assessment of the community's economic strengths and weaknesses, including the capability of declining industries to revive and opportunities to grow new industries;
- Framing of a clear, shared, and believable community narrative ("this is where we have been and this is what we can become") that motivates and mobilizes community actors;
- Preparation of a strategy that identifies the approach and development tools to be used (e.g., workforce training, research and development, business incubators, venture capital funds, technical and management assistance programs to business, investments in broadband telecommunications); and
- Commitment to regularly adjust the vision and roadmap in light of changing economic circumstances and new experience.

The experience of Springfield, Massachusetts, indicates the importance of assessment. In the early 1980s, all large metalworking employers closed operations, with the loss of thousands of jobs. In response, a coalition of labor unions, small employers, and government agencies formed the Machine Action Project (MAP) to develop a new path for the region. While MAP's original intent was to develop new service industries, its assessment discovered untapped opportunities in the metalworking sector. Research indicated that even after the closures, the area contained 350 metalworking shops employing 15,000 workers. "Rather than move workers out of the industry, MAP determined that the program's goal should be to nurture the remaining small firm economy composed of hundreds of small job shops that supplied tooling and parts to the machine tool, aerospace, defense, and electronics industries..."<sup>33</sup>

Leaders involved in the Cleveland turnaround credit the U.S. Economic Development Administration's requirement for a regularly updated strategic plan with forcing them to create a collective vision of where the

community was, where it could go, and how it would get there.<sup>34</sup> These leaders also noted the importance of carefully selecting a small number of projects that would significantly affect the economy. They believe that taking on too many projects leads to failure.

*Ability to implement the strategic plan.* Effective implementation of a good strategic plan is a function of trained economic development staff and a corps of motivated volunteers. Patience and commitment are needed as well, for successful adjustment often can be a long-term process. Implementation also requires financial resources, which can be in short supply in dislocated communities.

Staff and volunteers need to be involved in planning as well as implementation since planning informs implementation efforts. Those involved in planning also have a greater sense of ownership when it comes time for implementation. Thus, successful community adjustment also requires the recruiting staff and volunteers capable of both activities.

Cleveland Tomorrow, the CEO-led development organization, works through partnership and consensus building with other non-profit organizations and government. Hands-on volunteer involvement and leadership is deemed critical to success. Staff function behind the scenes. The organization seeks to be a catalyst, motivating leaders, staff, and volunteers to take coordinated action.

In the 1980s, Cleveland did not have its own financial resources to support redevelopment. As a result, federal infrastructure and Urban Development Action Grant (UDAG) money were key. From 1981 to 1988, Cleveland expended \$103.3 million in UDAG funds, primarily for downtown projects, and formed 37 separate public-private partnerships to implement various development deals.<sup>35</sup>

Cleveland's experience shows that patience is required in difficult adjustment situations. While Cleveland clearly has rebounded from its difficulties of 20 years ago, progress has not been easy and much remains to be done. Community leaders recognize that economic adjustment and community building is a long-term, iterative process, combining near-term victories, a long-term view, and a willingness to re-evaluate.

## E. Lessons Learned

The experience of communities hit by economic dislocation teaches several lessons about the local adjustment process:

- *The capacity of communities to adjust to dislocation in a key industry is widely diverse.*
- *In the short term, local economic assets are the most important influence on adjustment.* These assets are fairly fixed at the time of dislocation. With a given asset base, some communities are

able to adjust quickly through the normal workings of the market (e.g., Tulsa, Rochester), while others have difficulty adjusting without significant public intervention (e.g., Cleveland, Pittsburgh).

- *Over the long term, the factor most critical in the adjustment process is the quality of a community's civic institutions and leadership.* This factor will determine the extent to which the community can plan and implement an adjustment program successfully, and make the structural investments — in infrastructure, worker training, entrepreneurship, and quality of life, for example — that will facilitate adjustment. The quality of civic leadership is also an important determinant of a community's resistance to, or acceptance of, the need for change.
- *Communities differ greatly in the nature and extent of their need for outside adjustment assistance.* Some needs may concern economic assets (e.g., workforce training and infrastructure) that can be strengthened through public investment; others may concern a quality not easily purchased — leadership. Any federal adjustment program needs to take into account this wide variability.

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## V. Economic Adjustment: Lessons Learned at the National Level

*Successful economic adjustment programs have common elements of program design and operation.* The authors' review of 26 adjustment programs shows that well designed economic adjustment programs have a positive impact, but that not all programs are successful.<sup>36</sup> Experience reveals that the essential elements of designing an effective program can be grouped into four categories:

- 1) *Area eligibility.* Which areas are eligible to participate?
- 2) *Program resources.* What types of resources (e.g., money and experts) and scale of resources are available? What is the source of these resources?
- 3) *Program tools.* How can communities use these resources?
- 4) *Program organization and management.* How does the government organize the adjustment program? How is the program evaluated?

### + A. Area Eligibility

There are three choices for determining a community's eligibility for adjustment assistance.

A program can:

- 1) Name eligible places, using specific criteria;
- 2) Broadly describe the types of areas for which the program is intended and allow program officials to make subjective eligibility decisions; and
- 3) Establish objective criteria (e.g., employment loss and emigration) to identify communities needing assistance.

Experience suggests that the first approach is appropriate when the communities that are or will be experiencing dislocation can be clearly identified. This approach has been used in programs that address impacts of the closure or downsizing of government facilities. Examples include the Nuclear Cities Initiative (NCI), the Department of Defense Office of Economic Adjustment (OEA), and the Office of Worker and Community Assistance (OWCA) of the U.S. Department of Energy (DOE). Programs addressing impacts of

decline in one industry (e.g., logging and fishing) also may name communities that are highly dependent on that industry. Examples include the Northwest Economic Adjustment Initiative (NWEAI) and the Canadian Fisheries Adjustment and Restructuring Initiative (CFAR).

Establishing objective criteria for determining eligible communities is appropriate when it cannot be determined in advance which communities will be hurt by dislocation. The EDA and the European Union (EU) Objective 2 programs both define criteria that determine whether a community's economic problems qualify it for economic adjustment assistance.<sup>37</sup> The U.S. Community Adjustment and Investment Program (USCAIP) combined naming specific communities with objective criteria. In this case, Congress established automatic eligibility for border counties and allowed for additional areas based on economic impact.

Programs that allow officials wide latitude in naming eligible areas are less likely to be successful. England's Coalfield Communities Initiative (CCI), the Massachusetts Industrial Action Program (IAP), and the Organization for Economic Cooperation and Development's (OECD) Economies in Transition program rely on internal staff to identify potential areas of need and then develop a working relationship with officials in the local communities choosing to participate. This approach has proven problematic in the CCI effort; one coalfield region has taken hardly any action under the Initiative. Both the IAP and OECD programs generated a relatively small number of communities seeking assistance. Neither program has survived in its original form and the remaining efforts bear little resemblance to the original program intent.

Therefore, it appears that an economic adjustment program benefits from having clear criteria for determining whether a community is eligible for assistance. It also may be useful to distinguish between the community that qualifies for assistance and a broader region to which the assistance may be directed. A program may be more effective if it has the flexibility to direct its adjustment resources to an area wider than the eligible community, such as a metropolitan area or multi-county rural area. The EU's RECHAR program and the NWEAI used criteria to identify eligible areas initially, but contiguous areas were subsequently added. This allowed the program to direct the assistance more regionally and in line with local economic and labor market conditions. An evaluation of EDA's disaster assistance program noted that although the hurricane affected a concentrated area, "to be most effective, a post-disaster assistance strategy must take a regional approach to economic recovery."<sup>38</sup>

## B. Program Resources

In designing a federal adjustment program to help communities, decisions need to be made regarding the type and scale of program resources, and funding sources. The following questions need to be answered:

- 1) Should the program have a dedicated source of funding or should it leverage funds from existing development programs?

2) Should the program provide communities with access to financial resources, staff/expert resources, or a combination of the two?

3) What scale of resources will be available for the program as a whole? Of that amount, which resources will be available to individual communities?

### *Source of Resources*

Programs such as EDA, OWCT, Finland's mine closure initiative, and the EU Objective 2 program are more effective with a dedicated source of funding. Efforts with dedicated funds are able to assist communities with certainty and reliability. They are not distracted by the need to obtain funds from other programs and they are less likely to delay or deny assistance due to funding uncertainties.

On the other hand, programs that must leverage funds from other sources, such as NWEAI, USCAIP, OEA, OECD, and IAP, require program staff to invest significant amounts of time helping the community secure assistance. The alternative is to leave the effort solely in the hands of local authorities. The result, compared to programs with dedicated funds, can be a lower level of engagement by program staff, as well as a diminished sense of responsibility. Moreover, uncertain or uneven funding for localities harms the potential for adjustment. An evaluation of NWEAI noted, "[It would be useful to make] funding for local economic-development capacity...predictable and reliable" and thus not subject to the uncertainties of other funding sources.<sup>39</sup>

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### *Scale of Resources*

Determining the appropriate level of resources for an adjustment program can be quite difficult. This decision can be influenced by numerous factors, including the depth of the problem, number of communities affected, and national political and budgetary concerns. Overall program resources can range from tens of thousands to billions of dollars. The amount of funds per site can vary greatly as well. NWEAI channeled \$1.2 billion to affected counties over five years; CFAR will provide about \$750 million (U.S.) over three to five years; the peak annual budget of the OECD Center for Economies in Transition was \$25 million; the NCI program has a \$7.5 million annual budget; and the annual assistance to the Irish rural tourism program is \$500,000.

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Funds available per site are as variable. EU programs provide resources to support regional responses and, depending on the level of distress, can exceed \$100 million annually for a region such as North West England that has a total population of only five million. Federal resources allocated for a base closing often total several million dollars. EDA invests approximately \$1.5 million per community dislocation.

While the information presented here on what other programs have spent provides a benchmark for what might be spent to help communities adjust to the implementation of climate change policies, it does not indicate what should be spent. Although it is clear that the scale of resources needs to match the problem, any decision on this matter will have to be based on a number of uncertain factors (e.g., the number of communities at risk and the extent of the problem).

*Staff as a Resource*

Community adjustment programs are best served by offering a combination of financial and staff resources. This combination gives the program greater strength and flexibility to influence the factors that affect a community's ability to adjust to dislocation.

CFAR, NCI, and OEA's program appear to effectively combine both financial resources and staff expertise to help local communities engage in a productive adjustment process. In British Columbia, CFAR funded financial assistance as well as fishery adjustment coordinators to help deliver that assistance. NCI relies on internal and outside experts. OEA uses a dedicated professional staff that assumes responsibility for helping a community initiate and produce a successful development plan.

Several evaluations have stressed the importance of staff assistance in the adjustment process. The St. Louis County Economic Council notes in its report that the OEA project manager was a "valuable intermediary, helping the local community identify, evaluate and access resources and expertise" and was also "invaluable in helping St. Louis learn from the mistakes and successes of other communities." The report adds that OEA's approach to engaging staff "should be evaluated by other federal agencies as an effective approach to community and economic development."<sup>40</sup> Similarly, an evaluation of NWEAI concluded, "agencies with officials who are physically present in the affected communities or who personally work with potential beneficiaries have earned trust, respect and appreciation within the region."<sup>41</sup>

While outside consultants are not a substitute for internal staff expertise, they can be an appropriate complement in certain circumstances. For instance, NCI uses consultants who have pre-existing relationships with the cities and experience working in the region. A review of the Vietnam VACVINA program found that the expertise provided by trained volunteers helped farmers make significant gains in production and income.<sup>42</sup>

C. Program Tools

In designing a community adjustment program, the following questions should be considered:

- 1) Should the program support local capacity building and strategic planning or implementation projects, or both?



- 2) Should the program allow the local community to decide its adjustment strategy or impose or foster the strategy from above?
- 3) Should the program prescribe the types of tools it will support or be flexible, leaving the choice of tools to local communities?
- 4) Should the program provide support for short-term (1-3 year) projects or long-term (4-7 year) investments?

#### *Assistance for Capacity Building, Strategic Planning, and Project Implementation*

Efforts to support a community adjustment initiative can include assistance for building capacity (e.g., organization, staff, and skills), strategic planning, and project implementation. As noted earlier, economic development capacity and strategic planning are important determinants of adjustment success. In fact, outside resources often play a critical role in stimulating a community to hire appropriate staff and create an organizational unit dedicated to the adjustment effort. Strategic planning is particularly valuable in determining a coherent set of implementation projects.

The EDA and DOE economic adjustment programs include resources to support capacity building, strategic planning, and project implementation. EDA, EU's Objective 2 and RECHAR programs, and CFAR each require that implementation projects emerge from a local planning process. A study of EDA's program noted that "EDA's efforts to involve local governments and other entities in a regional strategic planning process acted as a facilitating mechanism or catalyst for recovery that otherwise would not have taken place."<sup>43</sup> A study of OEA's program noted that the "political aspects of the planning process were as important as its technical aspects as this led to the creation of a planning organization that determined who would participate, who would make decisions, and how the redevelopment objectives would be chosen."<sup>44</sup>

Local partners of implementation-only adjustment programs often impose their own planning requirement. For instance, the State of Washington tied NWEAI to an existing timber-related initiative that required communities to go through a planning and priority-setting process. The East Midlands regional development authority in the United Kingdom formulated a strategic plan under the CCI in an effort to bring more coherence and focus to the implementation process.

Care needs to be taken to make a required planning process meaningful, as the quality of strategic plans can vary. While some plans have little or no strategic coherence and primarily appear to be means for accessing desired funds, others are based on systematic and in-depth socioeconomic analyses that lead to a unifying mission statement and a coherent set of program actions targeted to specific economic problems.<sup>45</sup>

While support for planning is important, lack of corresponding support for project implementation may impede the adjustment process. Under OEA's defense adjustment program, which only supports capacity building and strategic plan development, local communities must seek project implementation funding from other organizations. These organizations often have different development priorities and timing sequences that may not coincide with the local adjustment process.

### *Responsibility for Strategic Direction*

An adjustment program can allow the local community to decide the strategic direction of its efforts (e.g., extent of support for specific declining and growing industries, level of effort to promote entrepreneurship). Alternatively, it can require localities to carry out a particular approach.

As indicated earlier, a local economic development and adjustment process works best when it is a product of locally determined needs and solutions. Most programs reviewed, including CCI, EDA, OEA, both EU programs, and OECD, allow the community to determine its approach to economic recovery.<sup>46</sup>

While programs typically do not impose strategy on dislocated communities, several do encourage specific development activities that may complement the locally determined approach. These activities help economic adjustment and address other national and local goals (e.g., environmental protection). The participation of the Department of Fisheries and Ocean in CFAR influenced some localities to propose development efforts tied to fisheries. NWEAI sought to foster an integrated approach to forestry management and economic adjustment through the Jobs in the Woods program, which received special Congressional funding. NCI encouraged the development of centers that furthered the program's nonproliferation and economic adjustment goals. OWCT worked with local communities on innovative leasing and bartering agreements for reuse of DOE assets, such as formerly classified products and technologies.

### *Type and Mix of Development Tools*

The list of possible development tools is quite lengthy. Examples include business loan programs, physical infrastructure funding, worker training, research park development, and peer community learning networks. A national or sub-national adjustment program can prescribe the types of tools it will support or leave the choice of tools to local communities.

Communities in an adjustment program benefit from having the freedom to choose their development tools. Programs offering such flexibility include CFAR, EDA, NCI, and NWEAI. EDA has perhaps the most flexible adjustment program. Its regulations allow resources to be used for a variety of activities such as infrastructure improvements, business financing, market or industry analysis, technical assistance, public services, training, and "other activities as justified by the strategy."<sup>47</sup>

Programs such as IAP, USCAIP, Oregon Wood Products, and the Forest Service's Rural Community Assistance Program provide for a prescribed set of adjustment tools. The resources for IAP and Oregon Wood Products initiatives were focused on building local organizations to help industry resolve competitiveness problems. Funds were not available to address problems identified by the community and resources had to be secured elsewhere for this purpose, thus complicating the adjustment process.

### *Multi-year Funding*

National and sub-national adjustment programs can either focus on funding discrete, short-term projects (1-3 years) or providing comprehensive, strategy-linked allocations over the long term (4-7 years).

CFAR, NCI, and the EU Objective 2 and RECHAR programs provide resources over 4 to 7 years. This support enables communities to build development capacity, and establish and implement a rational development plan. This long-term approach allows communities to focus more of their attention on the substantive development process and less on preparing frequent grant applications for individual projects. Stable funding also allows a community to develop and sustain staff capacity over the long term and to adjust proposed projects plans as development circumstances change.<sup>48</sup>

In contrast, the short-term approach can force a community to direct most of its attention to securing the next round of funding to maintain the development effort. Some initiatives use short-term funds to build local adjustment capacity, but run out of money before the capacity becomes stable. Others have difficulty securing funds to implement proposed projects. Oregon Wood Products and IAP tried to build community staff capacity quickly to help target firms become more competitive. The hope was that short-term financial support would allow local groups to demonstrate their value and thereby gain funding from other sources. However, sufficient funds were not obtained to continue the efforts.

## D. Program Organization and Management

In designing a community adjustment program, decisions need to be made regarding the program's organization and management:

- 1) What should the priority of the adjustment program be? How should it be structured?
- 2) Should the sponsoring government involve intermediate layers of government (e.g., states) or provide direct assistance to localities?
- 3) Should the program seek to coordinate with workforce and sector-specific adjustment efforts, or leave coordination to localities?
- 4) Should the program be evaluated to improve operational effectiveness?

## *Federal Organizational Framework and Capacity*

National and sub-national authorities need to determine the priority of an economic adjustment program and how it should be structured. Choices include a high-level interagency task force, a high-level single agency initiative, or a standard single agency initiative.

A high-level approach is preferable if a long-term commitment and clear structure for implementation are present. High-level interagency task forces, such as NWEAI, CCI, and CFAR, bring significant attention to the issue of concern. At least initially, they cause senior officials across government to take action to address the needs of local communities. Over time, however, the importance of NWEAI and CCI in national government has diminished as original task force members moved to other priority issues and lower level officials took their place. Neither initiative established a formal staff or a mechanism that could sustain the focus and be held accountable for results. CFAR, only three years old, may be the exception. Six national agencies did sign a memorandum of understanding establishing an overall framework for the coordination and delivery of resources, and the work of the program continues at its initial pace.

In various state-sponsored technology development initiatives, a single agency elevated an adjustment program to a prominent position so that it would receive priority consideration by high-level officials. Efforts in New York, Ohio, and Pennsylvania led to agency-sponsored development organizations with their own boards of directors (typically well connected to the agency director). These initiatives established strong staff-driven organizations and, over time, acquired a clear identity within the state and a separate line item in the state development budget.

Many programs are administered as standard agency initiatives. EDA's adjustment effort is just one of many development programs the agency administers, though the program is managed by a separate unit. Programs like OEA, OWCT, NCI, and the Forest Service Rural Community Assistance Program are sole adjustment efforts within a large institutional framework, have little prominence outside their constituency of users, and so carry relatively little political weight, which can lead to reduced program size and effectiveness.

While a high profile is useful for getting a program started, sustained success requires the organization of a core group of committed staff professionals who assume responsibility for effective implementation. An interagency task force requires a formal coordination mechanism and written resource commitments.

## *Role of Intermediary Levels of Government*

A national program can choose to engage other levels of government in the process by forming intergovernmental partnerships. Alternatively, it can allocate the resources directly to the affected community, bypassing other possible partners.

It is useful for a national adjustment program to involve intermediary levels of government. NWEAI provided for a federal interagency task force at the headquarters level and joint federal, state, and local agency task forces at the regional and state levels. This structure proved beneficial when the attention of headquarters officials diminished because regional and state interagency groups were still focused on the issue. Although this structure was designed to improve access to federal resources, it also resulted in communities gaining access to state development resources to support local adjustment. The end result was a much more integrated adjustment process.

Programs such as EDA and CCI give the community the responsibility for building partnerships with other levels of government. While CCI actually allows some of its resources to go through newly formed regional development authorities, the national government still controls the vast array of resources available for coalfield communities redevelopment. The result is a lack of clarity regarding the government's overall commitment to investing in affected communities. EDA's approach of working directly with localities bypasses the considerable development expertise and resources created by states in recent years, even though state involvement could be quite helpful.

#### *Coordination of Development Efforts*

Economic adjustment programs can focus on three possible constituencies needing assistance: the community, the worker, or firms in an economic sector. While few programs seek to address all three, there is a need to integrate actions across constituencies. A community-based adjustment program can seek to foster coordination and integration at the national or sub-national level, or place the burden of coordination and integration on the local community.

Communities benefit from an adjustment process that brings together the needs of workers, firms (sectors), and the community in one development framework. The starting point is at the national or sub-national level, where a program can build in an integrating framework at the outset.<sup>49</sup> CFAR is one program that addresses the needs of all three constituents together as six federal agencies use one overall process to consider a variety of development needs. NWEAI attempted to do the same and succeeded at the regional and state level. At the national level, however, the initiative apparently suffered from the lack of a formal mechanism to keep senior officials from participating agencies actively engaged.

Many of the programs reviewed — EDA, EU, IAP, OEA, USCAIP, and the state technology development organizations — leave it to the local community to achieve integration between community assistance efforts and programs directed at the workforce. The most common and successful is the linkage of community and worker assistance programs. Although communities have become quite skilled in brokering these linkages, the National Academy of Public Administration notes that their efforts have high transaction costs.<sup>50</sup>

## Program Evaluation

Examining the appropriateness, effectiveness, and efficiency of program operations is an important means for program improvement. A national adjustment program can choose to undertake ongoing assessment to support continuous program improvement, or pursue a more traditional, less involved monitoring of financial and programmatic performance.

Several initiatives reviewed for this report incorporate evaluation. For example, CFAR's design was based on lessons learned from detailed evaluations of earlier Canadian efforts to address fisheries restructuring. Moreover, CFAR developed an accounting system to track outcomes. Evaluation itself was both required and well funded.

Under the Government Performance and Results Act (GPRA), federal programs are required to establish, track, and report on "performance indicators" — measures of the effectiveness of a program in achieving its goals. While such a focus should indeed improve performance, program managers often try to establish indicators that they are sure will be positive, rather than indicators that might actually identify real problems that need to be resolved.

## E. Lessons Learned

Effective community-based economic adjustment programs have in common certain characteristics of program design and operation:

- Clear criteria for determining if a community is eligible for assistance, with flexibility to distinguish between the community whose economic conditions qualify for assistance and a broader region to which the assistance may be directed;
- Program resources that come from a dedicated source of funding, are adequate in size to the scope of the problem, and offer a combination of financial and staff assistance;
- Program tools that support capacity building, strategic planning, and implementation; can be used as the community sees fit to pursue the strategic direction it determines; and provide long-term support; and
- Program organization and management that reflects a high level of commitment, involves intermediary levels of government, links to workforce and sector-focused development efforts, and undertakes regular evaluation to support continuous program improvement.

Note that these characteristics appear as applicable to addressing the community impacts of climate change policy as they are to the impacts of trade, industry restructuring, and disasters. The next chapter offers a set of principles and recommendations for designing a federal economic adjustment program to assist communities.

## VI. A Community-Based Adjustment Program for Climate Change Policy

*A new federal adjustment program could help communities minimize the severity of economic impacts from global climate change policy, as well as facilitate and accelerate a successful recovery process.* Experience strongly suggests that national authorities have an important, appropriate role in responding to the economic adjustment needs of communities. More specifically, as suggested in Chapter IV, these authorities have a role in promoting the factors on which adjustment depends — local economic strength and diversity, competitive and adaptable economic assets, strong leadership and institutions, and the capacity for effective strategic economic planning and action.

Within the United States, the federal government has deployed a variety of economic adjustment approaches. Although most of the adjustment programs reviewed had some positive impact, the authors did not identify any one community-based economic adjustment program that appeared optimally structured to facilitate an effective local adjustment process no matter the cause of the economic problem.

How can the federal government best assist communities whose economies might be negatively affected by global climate change policy? This final chapter proposes a new federal adjustment program to help communities minimize the severity of economic impacts from global climate change policy, as well as facilitate and accelerate a successful recovery process.

### Principles and Recommendations

Four principles guide the authors' recommendations:

- 1) Commit to addressing the problem;
- 2) Be proactive;
- 3) Leverage and integrate additional resources; and
- 4) Be flexible in addressing local needs.

Simply put, an effective federal response requires action before the problems occur and requires the involvement of all levels of government.

**1) Commit to address the problem by designating a single responsible agency and authorizing dedicated new dollars. This principle is best achieved when a program is structured as follows:**

*Designate a lead federal agency to manage the adjustment program*

High level leadership has the benefit of bringing all of the key players to the table and establishing the issue as an item deserving priority attention. The responsibility for a new community adjustment program should reside within a single agency. The highest level official should be charged with responsibility for the initiative and directed to guide the effort. It should be clear that the agency is prepared to lead and deploy sufficient staff to manage the program effectively.

*The authors recommend that the Economic Development Administration (EDA) be the lead agency.* EDA brings extensive experience working with communities on a variety of adjustment problems and has demonstrated an ability to respond effectively to these needs. EDA, however, would have to modify its methods of delivering assistance to follow the principles outlined in this study. In particular, EDA would need to become more proactive, strengthen the role of its staff in the local adjustment process, finance strategies and not individual projects, collaborate more with other agencies, and institute processes for evaluation and learning.

*Authorize new dedicated dollars* New funds provide concrete evidence of an issue's importance and prevent turf battles that inevitably arise from reallocating existing resources for a new issue. An effective adjustment program must allocate resources for two critical functions: planning and implementation. Communities should be provided the opportunity to access early planning dollars to analyze economic conditions, build local capacity, and develop plans for adjustment before the onset of economic decline. Communities should also have the opportunity to access program implementation resources based on an acceptable plan.

*The authors recommend that new and dedicated resources of \$50 million be committed to eligible communities that want to address the potential impact of global climate change policy proactively.* This amount would support the planning efforts of the top 100 affected communities. The amount of resources required for program implementation is difficult to determine but an appropriate federal commitment might average \$5 million per community. This amount is at the high end of U.S. federal programs, but considerably less than European ones. This level of funding would provide substantial leverage to generate other public and private resources for program implementation.

**2) Be proactive by identifying potentially affected communities and helping communities take action before dislocations occur. To achieve this principle, a federal program can be structured to achieve the following goals:**

*Adopt early warning eligibility criteria* Eligibility criteria identify communities that warrant assistance. Although many programs use criteria that demonstrate an economic problem has occurred (e.g., increased level of unemployment), criteria can be used to indicate a community's dependence on economic sectors likely to be influenced by global climate change. This allows for proactive adjustment that can lead a community to analyze its economic situation, develop a vision for change, and organize and build the local capacity to manage adjustment.

*The authors recommend developing criteria that identify communities whose economies are susceptible to significant change.* It would be possible to link existing national economic databases (e.g., from the Bureau of Labor Statistics, the Bureau of Economic Analysis, and the U.S. Census) on businesses, workers, and communities, to identify more precisely which communities are at risk. Such communities, perhaps the top 100 that could be affected, should be eligible to participate in proactive adjustment.

*Use staff to assist communities early on* Staff expertise can make valuable contributions to the adjustment process and can be seen by local communities as a reflection of the importance the federal government gives to local success. OEA's adjustment program is noted for the effectiveness of its staff in helping local communities organize and plan for adjustment.

*The authors recommend that resources be allocated for federal program staff to play a pro-active role in helping eligible communities undertake adjustment planning.* This requires an allocation of sufficient administrative resources to support enough staff to help 100 communities to act.

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**3) Leverage and integrate additional resources by involving multiple federal agencies and all levels of government. Economic problems at the community level are complex, requiring a federal response that includes development resources at the federal, state, and local levels. To achieve the above principle, a federal program can:**

*Establish a federal interagency task force* Community adjustment efforts work best when all components of the development process — community, workers, and economic sectors — are heading in the same direction. Federal agencies such as HUD, DOL, DOA, SBA, and DOT have resources that are important to community adjustment. Agencies such as DOE and EPA bring experience and resources to address energy and environmental issues related to global climate change policy. For instance, these agencies could offer communities assistance in increasing the efficiency of energy-intensive industries, encouraging commercialization of alternative energy technologies, and promoting business development to take advantage of commercial opportunities generated by climate change policy.

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*The authors recommend that the lead agency (EDA) be empowered to convene an interagency task force to participate in the initiative.* Each invited agency should be required to commit financial and staff resources to the effort. Staff must be committed to playing a substantive role. The level and intensity of participation should be spelled out in an interagency agreement, and mechanisms put into place to ensure sustained commitment and participation. All agency efforts to support a community's adjustment should pass through the task force.

*Use state or local interagency task forces* An economic adjustment effort is most likely to succeed if it takes advantage of local opportunities and assets. State and local governments have significant programs and resources for economic development that should be linked to adjustment.<sup>51</sup> In addition, state and local agencies should partner with the private sector to bring in needed financial resources and expertise.

*The authors recommend that federal officials use a state or community task force to guide and coordinate the flow of funds for each local adjustment effort.* Such a group should include officials from relevant federal, state, and local agencies, and other community organizations. This group should establish an agreement for participation and mechanisms to sustain commitment and participation.

*4) Be flexible in addressing local needs by supporting comprehensive strategies, and allow an appropriate timeframe for action. Economic adjustment is most successful when communities have flexibility to determine their course of action in accordance with local conditions. To achieve this principle, a federal program can be structured to:*

*Allocate funds based on proposed strategies* Community adjustment efforts are most effective when they have sufficient resources to plan for the long-term and are not burdened with continual fundraising for project activities. In addition, local officials are best prepared to make decisions on project activities. Federal officials can improve the use of their program resources by working together under a single framework for directing resources toward strategies established by local communities.

*The authors recommend that federal adjustment program resources be authorized to finance locally approved strategies.* Federal officials should not have responsibility for approving project-level activities; local decision-makers should have great flexibility to use the resources in ways they think are best for their community.

*Authorize a multi-year time frame for using implementation resources* All types of factors affect the development effort, both before and during the process. To handle this effectively, a program must give local development officials the autonomy and time to facilitate recovery.

*The authors recommend that implementation resources be allocated so that a community has five to seven years to pursue adjustment.* This means that the initiative must have the authority and appropriations to make multi-year investments. Communities also must be afforded the opportunity to assess their progress and make mid-course modifications.

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+ **Community adjustment** to climate change policy

**VII. Conclusions**

*The federal government and local communities would best be served by a new federal adjustment initiative directly focused on communities whose economies may be negatively affected by global climate change policy.* This effort should assist communities before significant economic impact occurs. Early action could minimize the severity of possible economic impacts and preclude the need for economic restructuring within certain firms or industries. Early action also allows communities to foster more sustainable economic activities that deliver employment and environmental benefits to residents. The federal government should commit resources from several agencies to ensure an efficient and effective development effort.

**Recommendations for a Climate-Related,  
Community-Based Adjustment Program**

- Designate the U.S. Economic Development Agency as the lead federal agency.
- Authorize approximately \$550 million in new dedicated resources.
- Adopt “early warning” eligibility criteria based on dependence on vulnerable industries.
- Help at-risk communities plan for adjustment before dislocation.
- Provide expert staff to assist communities.
- Involve multiple federal agencies in supporting the adjustment process.
- Use state and local resources.
- Allocate funds based on locally determined strategies.
- Support the adjustment process over 5 to 7 years.

## Endnotes

1. Community-focused or “place-based” adjustment programs seek to assist one sub-state political subdivision (e.g., a county) or an economically coherent group of political subdivisions (e.g., a metropolitan area). Geographic areas, usually represented by their governments, are the targets for assistance, rather than workers or industry sectors *per se*.

2. Worker-focused economic adjustment programs are the subject of another Pew Center paper. See Jim Barrett, *Worker Transition and Global Climate Change*, Pew Center on Global Climate Change, December 2001.

3. Barry M. Rubin and Mark D. Hilton, “Identifying the Local Economic Development Impacts of Global Climate Change,” *Economic Development Quarterly*, Vol. 10, No. 3, August 1996, pp. 262-279.

4. For reductions of the magnitude required by the Kyoto Protocol, various economic modelers project a wide range of effects on GDP. The literature ranges from a 3% increase to a 4% decrease in GDP, with results centering around a 1% GDP loss. (See Robert Repetto and Duncan Austin, *The Costs of Climate Change: A Guide for the Perplexed*, World Resources Institute, 1997.) Forecasts depend upon one’s assumptions about the ingenuity of industry, the ability of the United States and other governments to implement flexible policies, base case emissions, and other factors. (See John P. Weyant, *An Introduction to the Economics of Climate Change Policy*, Pew Center on Global Climate Change, July 2000. See also Judith M. Greenwald, *Labor and Climate Change: Getting the Best Deal for American Workers*, Progressive Policy Institute, Washington, DC, October 1998.) EIA reports a range in GDP impacts of a 0.5% loss to a 4.2% loss relative to the base case. (U.S. Energy Information Administration, *Impacts of the Kyoto Protocol on U.S. Energy Markets and Economic Activity*, October 1998, SR/OIAD/98-03.)

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5. In the absence of climate policy, most analysts project significant future increases in natural gas production and employment. Analysts differ as to whether natural gas will be helped or hurt by climate policy, relative to a “business as usual” (BAU) scenario. See Dale W. Jorgensen, Richard J. Goettle, Peter J. Wilcoxon, and Mun Sing Ho, *The Role of Substitution in Understanding the Costs of Climate Change Policy*, Pew Center on Global Climate Change, Arlington, VA, September 2000, for an example of potential negative impacts on the natural gas industry. See the NEMS model results in Energy Information Administration, *Impacts of the Kyoto Protocol on U.S. Energy Markets and Economic Activity*, Washington, DC, October 1998, for an example of potential positive impacts on the natural gas industry. Most analysts find that, in a carbon control scenario relative to a BAU scenario, overall electricity consumption declines and the share of electricity generated by natural gas increases. Analysts differ as to whether the increase in the natural gas share of the electric generation pie makes up for the decrease in the size of the pie itself. These differing results are driven by differing assumptions about natural gas prices, the availability of opportunities to decrease electricity consumption through energy efficiency, and the degree of stringency and flexibility of carbon control policies. Among those who believe that the natural gas industry will be hurt by climate policy, there is a difference of opinion as to whether the losses will be large enough to offset the expected “business as usual” growth. Thus analysts differ as to whether the number of natural gas jobs will increase or decrease over time under a climate policy scenario. (For more information, see *Pew Center on Global Climate Change Workshop on Oil and Gas Markets and Climate Change Policy*, (August 9-10, 2001), [http://www.pewclimate.org/events/snowmass\\_conf.cfm](http://www.pewclimate.org/events/snowmass_conf.cfm).)

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6. The literature is full of studies estimating the impact of climate change policy on the U.S. economy. In the context of exploring national impacts, some of these studies point out industries that are particularly vulnerable (for example, Standard & Poor’s DRI, *The Impact of Meeting the Kyoto Protocol on Energy Markets and the Economy*, for UMWA-BCOA LMPCP Fund,

July 1998), but there are few detailed studies of the specific impacts of climate change policy on these vulnerable industries. Ronald J. Sutherland, *The Impact of High Energy Price Scenarios on Energy-Intensive Sectors: Perspectives from Industry Workshops*, Argonne National Laboratory, July 1997, is probably the best available attempt, but it has been widely criticized. See, for example, Jim Barrett, *Lost Profits or Lost Jobs: The Argonne Assessment of the Effects of Carbon Reduction Policies on the Aluminum Industry*, Economic Policy Institute, 1997. The 1998 Standard & Poor's DRI analysis forecast a 1.3% decline in GDP in the carbon control case relative to the base case, and forecast that certain industries would suffer significant declines in output.

7. Ibid.

8. Standard & Poor's DRI, 1998

9. "The Eco-Cars: As Detroit Stalls, Japan Drives in with Appealing New Hybrid Models," *Business Week*, 14 August 2000, pp. 62-68.

10. Andrew Hoerner and Jim Barrett, *Clean Energy and Jobs: A Comprehensive Approach to Climate Change and Energy Policy*, Economic Policy Institute, Washington, D.C., forthcoming.

11. Jorgenson et al., 2000.

12. DRI Long-range Forecast, 1996; ICF Kaiser International and WEFA Group, *Global Industry Review*, 1st Quarter 1997, cited by Greenwald, 1998, p.5.

13. One analysis forecasted a 0.9% job loss nationally, with a 2.7% job loss forecasted in the most affected state, Wyoming. Standard and Poor's DRI, 1998.

14. Some communities are far more vulnerable than state-level data indicates. For example, West Virginia, a state relatively dependent on the coal industry, has some counties highly reliant on coal mining for employment and earnings. While the coal industry provides 3.2% of jobs and 6.5% of wages in the state of West Virginia, the industry provides 48% of jobs and 63.4% of earnings in Boone County, WV. (See Eric C. Thompson et al., *A Study on the Current Economic Impacts of the Appalachian Coal Industry and its Future in the Region*, Center for Business and Economic Research, University of Kentucky, forthcoming, pp. 31-35.)

15. From 1980 to 1995, U.S. coal production increased 25% while coal-mining employment declined 58% from 229,000 to 97,000 workers. Absent any climate change policies, the number of mineworkers nationwide is expected to decline by another 38% to 68,000 by 2010, even though coal production is expected to increase by 18%. The (western) Powder River Basin share of total U.S. coal production increased from 13% in 1978 to 30% in 1996. U.S. Energy Information Administration, *Impacts of the Kyoto Protocol on U.S. Energy Markets and Economic Activity*, SR/OIAF/98-03, 1998, Washington, DC.

16. Andrew M. Isserman, *Socio-Economic Review of Appalachia: The Evolving Appalachian Economy*, Appalachian Research Commission, November 1996.

17. Driving the east-to-west shift are productivity, lower labor costs, acid rain legislation (which requires sulfur emission reductions from coal-fired power plants), and competition and deregulation of the railroad industry (which has made it less expensive to transport coal from western mines to eastern power plants).

18. This study projects a loss of 36,000 jobs in the U.S. oil and gas extracting industry and \$8.7 billion in that industry's contribution to GDP. Projected losses in the refining industry are smaller—1,000 jobs and \$480 million. S. Laitner, S. Bernow, and J. DeCicco, "Employment and Other Macroeconomic Benefits of an Innovation-led Climate Strategy for the United States," *Energy Policy*, 26(5), pp. 425-432, 1998.

19. Oil and gas production employment declined by more than 50,000 jobs by February 1999, leaving the United States with less than half the number of oil and gas extraction jobs it had during the early 1980s, when oil prices were more than four times as high in real terms. James M. Kendell, "Employment Trends in Oil and Gas Extraction," EIA/DOE-06-7 (99).

20. Ibid.

21. According to EIA, the leading oil and gas producing states (Texas, Louisiana, Oklahoma, California, and Alaska) tend to have larger and more modern facilities, and are thus less affected by price- or climate policy-induced changes in drilling and production than states with many smaller, older, and more marginal wells. The communities near these smaller wells may be hurt by climate policy if price increases are larger than their relatively thin profit margins.

22. One analysis forecasted that climate policy would hurt refiners in the northeast and the Gulf Coast and undercut refiners on the West Coast, but have little effect on isolated Midwest and Rocky Mountain refineries. Sutherland, 1997.

23. Joel Kotkin, "A Gusher of Technology in Downtown Tulsa," *New York Times*, 16 July 2000.

24. Cement plants tend to be located in small communities that might be hurt. Aluminum plants in the Pacific Northwest will be unaffected because they use hydropower. Coal-based aluminum plants in Alabama and other parts of the South are more vulnerable. For steel, Chicago-Pittsburgh integrated mills are vulnerable, but the minimills throughout the country are likely to be unaffected. For the paper and pulp industry, coal-fired facilities in the Atlantic and North Central regions, and non-integrated mills are the most vulnerable. Sutherland, 1997

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25. Some analysts suggest that populations in some dislocated communities are relatively transient (e.g., Western mining towns) and so outmigration is an appropriate adjustment mechanism. This paper assumes that public policy values community stability and economic well-being of residents, that not all communities experiencing dislocation will have transient populations, that economically forced outmigration carries costs for those moving and those left behind, and therefore that outmigration is not an appropriate tool on which to base community adjustment.

26. Each written assessment discussed program objectives, strategy, assumptions, funding, structure, programmatic tools, organizational capacity, timing and duration, outcomes and impacts, lessons learned, and the implications for climate change adjustment policy. Research for several European programs was conducted on-site.

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27. For example, the Appalachian Regional Commission, the Department of Housing and Urban Development's empowerment zone program, and county economic development business retention programs were outside the bounds of the study. Adjustment programs that are not community-focused also were excluded. For example, worker training programs funded through the Trade Adjustment Assistance Act, or the Department of Energy's sector-based Industries of the Future Program did not qualify for review.

28. Leslie Eaton, "A City, Once Smug, Is Redefined," *New York Times*, June 6, 2000.

29. Joel Kotkin, "A Gusher of Technology in Downtown Tulsa," *New York Times*, July 16, 2000.

30. Dislocated communities often see a rise in "entrepreneurship of necessity" as laid-off workers earn income through a variety of low-paying part-time contractor jobs (e.g., house painting, lawn care). While such employment is an important stop-gap source of income, this section is concerned with entrepreneurship leading to the development of more substantial businesses.

31. Rodney Ho, "A Town Transformed: It takes a few young people to remake a village," *Wall Street Journal*, May 22, 2000. North Adams also has been helped by state investment in the Massachusetts Museum of Contemporary Art (MassMOCA), a new tourist destination that fills several old factory buildings with massive pieces of modern art.

32. Harvard Business School, "The Cleveland Turnaround: Responding to the Crisis (1978-1988)," Harvard Business School Case Study 9-796-151, 1996.

33. Robert Forrant and Erin Flynn, "Seizing Agglomeration's Potential: The Greater Springfield Massachusetts Metalworking Sector in Transition, 1986-1996," *Regional Studies*, vol. 32.3, pp. 212-13.

34. Edward W. Hill, *Policy Lessons from Cleveland's Economic Restructuring and the Accompanying Case Study*, The Urban Center, Levin College of Urban Affairs, February 1997.

35. Hill, *op. cit.*

36. The following analysis is qualitative, rather than quantitative, in nature. Existing literature contains very few quantitative analyses, and such analyses were beyond the scope of this project. Consequently, the authors were unable to compare alternative design options in terms of quantified impacts.

37. EDA awards economic adjustment assistance to an area if it meets certain criteria, including an unemployment rate that is one percentage point above the national average for the past 24 months or a per capita income that is 80 percent or less of the national average. For these areas, EDA's assistance covers 50% of the proposed project costs. The percentage of assistance increases the higher the rate of distress. For example, EDA will cover 80% of project costs where the unemployment rate is 225% above the national average for the 24-month period. The EU Objective 2 program requires an eligible area to have an average level of unemployment higher than the average of the EU for the past three years; industrial employment higher than the EU average in any of the previous 15 years; and an observable fall in industrial employment relative to the reference year. The EU RECHAR program required the loss or planned loss of 1,000 coal-mining jobs within a town since 1990.

38. Aguirre International, *EDA's Post-Disaster Assistance Program After Hurricane Andrew: Final Report*, Economic Development Administration, U.S. Department of Commerce, Washington, D.C., March, 1996, p. 37.

39. E. Thomas Tuchmann, Kent P. Connaughton, Lisa E. Freedman, and Clarence B. Morwaki, *The Northwest Forest Plan: A Report to the President and Congress*, U.S. Department of Agriculture, Office of Forestry and Economic Assistance, December 1996, pp. 182-184.

40. St. Louis Economic Council, *Two Regions: Facing Defense Aerospace Downsizing*, St. Louis, MO, 1999, p. 63.

41. Tuchmann et al., pp. 192-193.

42. VACVINA, UNICEF, and Rosemary Morrow, "Intensive Small-Scale Farming in Vietnam," *ILEIA Newsletter*, Vol. 11, No. 1 p.4, [www.oneworld.org/ileia/newsletters/11-1/11-1-4.htm](http://www.oneworld.org/ileia/newsletters/11-1/11-1-4.htm).

43. Aguirre International, 1996, p. 37.

44. Bernard Frieden and Christie Baxter, *From Barracks to Business: The M.I.T. Report on Base Redevelopment*, Economic Development Administration, U.S. Department of Commerce, Washington, DC, Spring 2000, p. 13.

45. John Bachtler and Sandra Taylor, *Objective 2: Experiences, Lessons and Policy Implications*, European Policies Research Center, University of Strathclyde, Glasgow, United Kingdom, 1999, p. 87.

46. OEA officials note that while they must approve a local redevelopment plan before implementation, they do not impose their judgment on the content and substantive direction of the plan, viewing that as a local decision.

47. Economic Development Administration, U.S. Department of Commerce, *Federal Regulation: P.L. 105-393, 13 CFR Chapter III*, 2000, p. 42.

48. A study of the EU Objective 2 program notes that as the program development process is too complex to be undertaken easily (or quickly), “the strategic management of multi-annual programs began to be accepted as more conducive to efficient and effective planning” (Bachtler and Taylor, 1999, p. 262). A study of NWEAI found that “the Forest Service’s Rural Community Assistance program, and various state economic and workforce development funds, provide money so that communities can hire specialists or make comparable arrangements to assemble the plans and ideas that will lead to investments in plants, buildings, infrastructure and community facilities. The indirect payoff of such grants is essential in laying the groundwork for further development work.” (Tuchmann, et al., pp. 182-184).

49. Over the last 20 years, most countries have moved away from economic adjustment strategies targeted to economic sectors. In the past, much effort was devoted to subsidizing firms in a declining sector without requiring them to become competitive. This approach is now seen as inhibiting restructuring. Some efforts are now underway to help firms in a declining industry by fostering technological innovation or other market-based activities. Programs like DoD’s Maritech and DOE’s Industries of the Future may be useful to local communities engaged in an adjustment process, provided the program corresponds to the industry make-up of the community and the area decides it wants to focus its development program in this direction. In such circumstances, it might be useful to provide linkages between national sectoral programs and the local adjustment process.

50. National Academy of Public Administration, *A Path to Smarter Economic Development: Reassessing the Federal Role*, Washington, DC, November 1996, p. 52.

51. The authors’ review indicates that states are capable of designing useful adjustment programs (which often rely on federal resources). However, it should be noted that the authors found no instance in which a state program on its own has been sufficient to address the problem of severe dislocation.

## Appendix: Illustrative Case Studies

### *U.S. Economic Development Administration's (EDA's) Economic Adjustment Program*

One of the missions of EDA, an agency of the U.S. Department of Commerce, is to support long-term economic recovery in economically distressed areas of the country. EDA's economic adjustment program (historically Title IX, now Section 209 of Public Law 105-393 (42 U.S.C. et seq.)) focuses on communities facing sudden and severe economic dislocation. Should the United States fail to enact a specific economic adjustment initiative for communities hurt by global climate change policy, this is the federal program such communities would turn to.

For 25 years, EDA has responded to an extraordinarily broad array of economic adjustment problems caused by, for example, free trade, plant closings, rural crises, defense downsizing, natural disasters, and urban riots. EDA provides grants to a local community to analyze its economic circumstances, develop a plan to address its economic needs, and undertake economic development projects. Many kinds of projects may receive funding, including infrastructure improvements, capitalization of locally administered Revolving Loan Funds, market or industry research and analysis, technical assistance, public services, training, and almost any other initiative that is justified by the community's plan.

Potential grantees must formally apply to EDA for funding and document economic dislocation. The grant recipient is generally a local government or local development organization. A community generally receives two types of grants — first, a planning and strategy grant, and then one or more implementation grants. A typical planning grant is \$200,000 (one-time only); a typical implementation grant is \$1 million per project. EDA's total adjustment budget is over \$100 million per year.

The process of securing both planning and implementation can take at least three to four years, although communities that already have an EDA-approved plan in place for other reasons may go directly to the implementation phase. Most adjustment efforts take time, and many projects do not realize their full potential job and income benefits until five to seven years after they have been completed.

### *Northwest Economic Adjustment Initiative (NWEAI)*

In October 1993, President Clinton announced the Northwest Forest Plan, including the Northwest Economic Adjustment Initiative (NWEAI), to resolve the spotted owl controversy — a series of legislative and legal battles that had virtually halted federal timber sales in the Pacific Northwest. The plan and the initiative addressed forest management, economic adjustment, and interagency coordination. The NWEAI committed \$1.2 billion in federal assistance to help timber-dependent communities in the region make the transition to a more diversified economy. It was designed to last from 1993 until 1998.

The idea of the NWEAI was to have federal, state, local, tribal, and private representatives work together to match technical and financial assistance with locally determined needs and opportunities. This was especially difficult because job retraining, economic development, and ecosystem restoration activities are scattered among seven Cabinet departments and 16 agency programs, each with its own rules. Under the NWEAI, for the first time county officials could sit down with all of the relevant federal and state agency representatives at once, explain their situation, and find out what kind of assistance was available to meet their needs. Also for the first time, federal and state agency representatives collaborated on project selection and funding fully aware of what each agency was doing in each community, taking into account the community's priorities.

The initiative included:

- A Multi-Agency Command overseeing policy from Washington, DC and working to resolve barriers that could not be overcome in the region;
- A regional Community Economic Revitalization Team (RCERT) overseeing daily operations;
- Three state CERTs implementing the initiative; and
- State CERT representation from 11 federal agencies and Governor-appointed local, state, and tribal representatives. The CERT fostered community-level economic development planning, considering only those projects that were submitted by a county.

The NWEAI was implemented through a Memorandum of Understanding among the agencies and with the governors of the three affected states. The initiative had no specific legislative or regulatory authorization and no new staff resources. Although the \$1.2 billion was “new” money to the Pacific Northwest, only some of the money was new for the federal agencies, many of which had to reprogram funds away from other regions. Thus, the new forms of interagency cooperation initiated by NWEAI are not institutionalized in laws or agency rules, and may die with the initiative.

The hallmarks of the NWEAI were the use of multiple tools funded by multiple agencies at multiple levels of government, public-private partnerships, and innovative joint financing of proposed projects. The NWEAI used the vast array of available tools, including project grants, block grants, contracts, loans, funds for relending, loan guarantees, job training, technical assistance, subsidies for state and local staff, and economic development training. The NWEAI also pioneered a new tool, Jobs in the Woods, that integrated economic and environmental goals by combining worker retraining, the creation of ecosystem jobs, and ecosystem management reform.

#### *The Canadian Fisheries Adjustment and Restructuring Initiative (CFAR)*

CFAR is Canada’s bicoastal response to two separate fishery crises: the closure of the groundfishery in the east, and the restructuring of the salmon fishery in the west. The goal on both coasts is to restructure the fisheries and create new jobs in the affected communities. In the west, there is greater emphasis on rebuilding the salmon resource. In the east, there is greater emphasis on providing employment and income assistance to individuals. CFAR was announced on June 19, 1998. It is a three- to five-year initiative, depending on the component. The overall program funding is \$1.13 billion: \$400 million was allocated for CFAR West, and \$730 million for CFAR East.

CFAR embodies hard lessons learned from The Atlantic Groundfish Strategy (TAGS), an earlier \$1.9 billion Canadian effort. TAGS is widely regarded in Canada as a failure because it provided income support to individuals, but failed to help people and communities transition to new jobs and businesses. As a result, CFAR is much more comprehensive, and much more focused on job creation and economic transition. Whereas TAGS was one program of one agency (Human Resources Development Canada), CFAR involves multiple programs at multiple agencies. TAGS was criticized for lack of coordination with other programs and agencies; interagency coordination is a hallmark of CFAR. TAGS ran out of money because officials underestimated its target population, while CFAR officials know precisely the number of individuals who may be eligible for different measures. TAGS was to last indefinitely; CFAR officials are clear that CFAR is a final opportunity for communities, businesses, and individuals to receive transitional support. CFAR is an extraordinarily comprehensive initiative. It includes:

- Adjustment measures for individuals, such as final cash payments from the closeout of TAGS, establishment of eligibility for Canada’s comprehensive employment assistance services, and early retirement payments;

- Fishery restructuring measures, such as retirement of fishing licenses, pilot projects for practices and technologies that enable selective fishing, commercialization of under-utilized species, promotion of recreational fishing, incentives to reduce the number of fishing vessels, tourism promotion, and temporary fleet reductions;
- Resource rebuilding, including habitat restoration projects, community-based staff to promote conservation, use of hatcheries, and a new permanent fund for habitat protection; and
- Community economic development, with various combinations of financial and technical support to communities (through community-initiated projects such as tourist centers, and local capacity-building such as the funding of fisheries adjustment coordinators) and support for private enterprises (e.g., small business loans).

The various components of CFAR are integrated, both substantively and institutionally. For example, the fishing license retirement both reduces pressure on fish populations and provides economic adjustment assistance to fishers exiting the industry. The development of commercial fisheries for under-utilized species, and of technologies to enable selective fishing, helps protect the salmon and groundfish populations most at risk and also creates new jobs.

CFAR is not a new program *per se*, but rather an infusion of money into several existing programs. The initiative involves six federal Canadian departments with responsibility for the environment, employment assistance, and economic development. These agencies signed a Memorandum of Understanding establishing an interdepartmental committee to oversee implementation and local project selection committees that include federal, provincial, and local representation. CFAR focuses on matching a wide variety of economic development tools with local needs, which are determined through local planning processes. CFAR has a formal structure, funding, legal status, a performance accountability system, and dedicated staffing.

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