

Taking Urgent Actions to Combat Climate Change Impacts

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ABSTRACT

This paper proposes some principles for urgent adaptation strategies against the impacts of climate change, which can reconfigure development and economic growth.

Adaptation is building resilience and reducing vulnerability; it is not simply a matter of designing projects or putting together lists of measures to reduce the impacts of climate change. National policy responses should be anticipatory, not reactive; and should be anchored in a country's framework for economic growth and sustainable development. They need to be integrated with its poverty reduction strategies. Poverty and climate change/adaptations are linked in low-income countries where the economy heavily depends on weather-sensitive suppliers, such as agriculture. Many poor people in developing countries are at risk of extreme weather conditions, and climate change impacts.

Therefore, short-term actions and long-term planning can both be necessary to combat the effects of climate change. While national governments have a duty to take long and short-term urgent actions, international communities also have responsibilities for long-term actions. Thus, this paper discusses urgent adaptation actions (short-term) and long-term adaptation actions, separately. The results of this study shows that both natural and human system can effect on urgent actions and for each extreme event, different adaptation actions are necessary.

Keywords: Climate change impacts; climate change adaptation; international communities; national governments; urgent action

INTRODUCTION

Climate change will have important effects on development, poverty mitigation and reaching the millennium development objectives (specific objectives could be economic conditions (Stocker, 2014)). Some hard-fought improvements made to achieve these global objectives can reduce or even invert climate change threats to water, agricultural production, nutrition, food security, and public health Fitchett et al. [1]. Countries and districts that fail to adjust to climate change will cause global insecurity by dispersing disease, conflicts over supplies, and destruction of the economic systems Eisenack et al. [2].

Given the wide-ranging undesirable effects of climate alteration, adaptation should be an integral element of an applicable strategy to alleviate climate change impacts Barreca et al. [3]. The links between adaptation and mitigation are complex. If more mitigation actions are

performed, less adaptations are needed. Nevertheless, even if considerable efforts are carried out to decrease greenhouse gas emissions, some aspects of climate alteration are inevitable and will cause undesirable effects, some of which even now are being felt Settele et al.[4].

The developing countries that potentially produce greenhouse gases, will be affected the worst from climate alteration and have the minimum capacity to adapt. Basic principles of justice indicate that special adaptation funds and particular strategies are needed for developing countries in order to urgently combat the effects of climate change.

Poor developing countries release 63% of the global greenhouse gas emissions; however, 98% of those countries are significantly affected by climate change Linnerooth and Mechler [5]. Here, general adaptation actions which can be executed by different sectors are explained.

General Activities to Combat the Effects of Climate Change in Relation to Different Sectors

Transport

Transportation emissions contain about one quarter of the worldwide CO₂ emissions, and are even more significant in terms of their effect in developed countries, particularly in North America and Australia. Although modes of mass transportation like buses, light railways (e.g. metro, subway), and long-distance rail have the maximum energy efficiency (which means their energy use is twenty times less per person-distance than for a personal automobile), many US and Canadian citizens for example, can increase climate change effects due to the emissions from their individual cars.

Modern energy-efficient machines, like plug-in hybrid electric vehicles, and also carbon-neutral synthetic gasoline and jet fuel can aid in decreasing the consumption of petroleum, and the emissions of carbon dioxide. Utilizing rail transport, particularly electric rails, can considerably decrease emissions. By employing electric trains and cars, there is the opportunity to run them with low-carbon power, creating a far smaller amount of emissions.

Urban Planning

Effective urban/community planning should be used to decrease greenhouse gas emissions from transportation. Personal cars are particularly inefficient at transporting passengers; whereas public transport and bicycles are very proficient. Incompetent urban and land use improvement practices can raise infrastructure costs as well as the amount of energy required for transportation, community services, and buildings.

The smart practices for urban planning contain condensed community improvement, various transportation selections, combined land uses, and practices to preserve green space. These programs offer environmental, economic, and quality-of-life profits; and they can also decrease energy consumption and greenhouse gas emissions.

Smarter land-use policies have both direct and indirect impacts on energy usage behavior. For instance, transportation energy usage and the number of petroleum fuel users might be considerably decreased by more condensed and mixed land-use improvement patterns. A wider variety of non-automotive established transportation selections would also contribute.

Building Design

Emissions from housing are considerable; and government-supported energy proficiency programs should be used to lessen these emissions. Actually, greenhouse gas emissions are related to the total area of buildings and the climate situation in the United States Gunderson et al. [6].

New buildings can be built using a passive solar building design; low-energy buildings, or zero-energy building methods; and using renewable heat supplies. Current buildings can be improved efficiently by: installing insulation, high-efficiency appliances (principally hot water heaters and furnaces), double- or triple-glazed gas-filled windows, external window shades, and the building's orientation and site.

Renewable heat resources like shallow geothermal and passive solar energy can decrease the quantity of greenhouse gas emissions. Furthermore, in order to design buildings which are more energy-efficient in hot weather, it is possible to apply lighter-colored, more reflective materials in the development of urban regions (e.g. via painting roofs white) and to plant trees. This can save energy since it cools down the buildings and decreases the urban heat impact; and as a result, decreases the usage of air conditioning.

Agriculture

According to the EPA, agricultural soil management attempts can control the production and emission of nitrous oxide (N₂O), a main greenhouse gas and air pollutant.

Activities that can increase N₂O emissions are fertilizer usage, irrigation, and tillage. The management of soils causes half of the emissions from the agriculture sector.

One third of emissions derive from cattle livestock, through methane emissions. Also manure organization and rice cultivation can create gaseous emissions.

Techniques that considerably raise carbon sequestration in soil are no-till farming, residue mulching, cover cropping, and crop rotation; all of which are more extensively applied in organic farming. Although only 5% of US farmland presently uses no-till and residue mulching, it causes carbon sequestration.

Even though farming can reduce soil carbon and condense soil which is incapable of supporting life, conservation farming can keep carbon in soils, and repair the damage during climate change.

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The best organization practices to alleviate soil organic carbon in soil include: alteration of arable land to grassland, straw combination, decreased tillage, straw combination mixed with decreased tillage, ley cropping system and cover crops.

In addition groundwater withdrawal in agriculture sector can effect on adaptation plans and decrease the groundwater abstraction is the most important urgent action.

Societal Controls

An additional technique which can be considered is to make carbon a novel currency through presenting tradeable **personal carbon credits**. The idea will inspire and prompt individuals to decrease their carbon footprint via the methods by which they live. Each citizen will get a yearly free quota of carbon that they may consume by traveling, buying food, and going about their business. It has been proposed that applying this concept may resolve two problems: pollution and poverty. Old age pensioners will actually be better off since they fly less often, so they can cash in their tax at the end of the year to pay heating bills and so on.

Governmental and Intergovernmental Actions

Many countries, both developing and developed, have targets to use cleaner technologies. Use of these technologies assists alleviation and could result in substantial decreases in CO₂ emissions. Their policies contain objectives for emissions' decreases, for the expanded usage of renewable energy, and expanded energy efficiency. It is often debated that the outcomes of climate alteration are more harmful in poor nations, where structures are vulnerable and few social services exist. The Commitment to Improvement Index tries to examine rich countries' policies set up to decrease their uneven usage of the global common extreme event Countries' policies are considered acceptable: if their greenhouse gas emissions are decreasing; if their taxes on gas are high; if they do not support the fishing industry; if they have a small fossil fuel rate per capita; and if they manage imports of illegally cut tropical timber Settele et al. [4].

Implementation

Implementation puts into practice climate alteration mitigation plans and objectives. These can be objectives set by international bodies or

for voluntary achievement through individuals or institutions. This is the most significant, affluent and least appealing aspect of environmental governance.

Adaptation is about creating resilience and decreasing vulnerability. It is not just a matter of planning projects or compiling lists of measures to decrease the effects of climate alteration Engle et al. [7]. A national policy response must be preventive, not reactive; must be part of a region's framework for economic growth and sustainable improvement; and must be incorporated with strategies for poverty alleviation. Information is essential for planning urgent adaptations to climate alteration Wise et al. [8]. Countries require the capacity and supplies to follow meteorological patterns, predict effects, and evaluate risk, in order to make positive urgent decisions and pass on timely information to their citizens.

Capacity for monitoring and anticipating climate alteration can considerably influence livelihoods. For example, for farmers having access to new systems of adjustment and early identification of immediate alterations in rainfall patterns or temperature, it can make the difference between a good yield harvest and crop breakdown Iglesias and Garrote [9]. The science is obvious; climate change effects are being sensed currently and their significant effects are inevitable in the future. Urgent adaptation is necessary to decrease human and social costs of climate alteration. There are many possible adaptation strategies and actions; thus, the aim of this study is to describe the immediate actions that can mitigate the effects of climate change.

METHODOLOGY

This section provides the important parameters of the necessary methods for urgent actions against climate change.

Rethinking Development

Climate change control creates both a responsibility and an opportunity to reconfigure improvement strategies. However, without control, the natural environment meets the demands of the current generation without considering future generations' capabilities to meet its demands (Wise et al., 2016) [10]. Today people also want to cooperate in urgent adaptation actions and figure 1 showed that the number of people that want the government provide unique agreement to do the urgent actions.



Figure 1. Number of people who asked the government to do urgent actions against the climate change Earth science [11]

Urgent adaptation strategies must be estimated through the following four values Keller and DeVecchio. [12]:

- Scale: match reactions to the increasing number of people at risk.
- Speed: waste no time since climate alteration is occurring sooner than anticipated.
- Focus: control risk, establish resilience (especially for the developing countries), and increase the functions of the ecosystem that depends on human activities.
- Incorporation: identify the connections among the environment, improvement, and climate alteration; and control synergies and trade-offs between alleviation and adaptation.

The control of climate change can increase by improving the urgent adaptive capacity of society. Before making this improvement to adaptive capacity, poverty needs to be decreased and human development should be increased. One of the important factors that affects urgent adaptive capacity is access to future climate information, dissemination of the information, tailoring to end-user requirements and delivery in a timely manner Cinner et al. [13].

Although building new infrastructure, for instance new sea walls, dykes, and irrigation systems, is necessary for making urgent adaptation actions, educated people have a significant role using their political voices to express views and worries, with valuable local governments efficiently linked to national governments Asadabadi et al. [14]. Most of these requirements should be met at the people's level, for their families and communities. However, most of the work on

climate alteration, even on adaptation, is completed at a global level. These approaches should be changed “upside-down” and institutions must be fortified to initiate them at a local level.

Building Resilience

Climate change increases risk; especially for those who are dependent on weather patterns, agriculture, water, and other natural supplies for their livelihoods.

The amount, timing, and location of these climate effects are naturally unstable; however, the threats are known and they are at a maximum intensity in most cases. According to these uncertainties, urgent adaptation strategies must be established on “upstream” interventions that will have benefits regardless of particular, climate-related events. Instances of such win-win strategies include: increasing the variety of crop strains crop strains; tolerance of a variety of several circumstances (heat, drought, salt, etc.); strengthening social capital and resilience; making systems of early warning and preparation plans; developing public health organizations; and strengthening disease investigation. These strategies will be effective regardless of the exact effects of climate alteration at a specific time or situation. The following section emphasizes adaptation challenges in three main sectors, which are important to sustainable improvement: food and agriculture, ecosystems and natural resources, and health. As each of these sectors is strongly intertwined, national urgent adaptation and sustainable improvement plans must deal with them in an incorporated manner Perry. [15].

Adaptation Challenges in Three Main Sectors

Ecosystems and Natural Resources

Climate change can destroy numerous ecosystems that are already endangered through damage and overuse. It can cause direct and harsh effects on those who rely on them for their livelihoods. There is often a lack of access to alternative services for poor people in developing countries which are exposed to ecosystem alterations that could cause droughts, floods, and famine. The poor often live in places that are susceptible to environmental dangers, and there is also an absence of financial and institutional defense against these threats. Climate alteration can result in ecosystem breakdown and large-scale population movement Pecl et al. [16].

The Millennium Ecosystem Assessment (MEA), issued in 2005, measured the results of ecosystem change for human well-being, and also the scientific basis for the urgent action which is required to increase conservation and sustainable use of these systems Anderson et al. [17]. The MEA clearly showed that human actions are diminishing the Earth's natural capital, putting such strains on the environment that the capability of the planet's ecosystems to maintain future generations can no longer be taken for granted.

Generally following urgent adaptation principles are essential for preserving biodiversity under altering climatic circumstances:

- take action now;
- preserve and raise ecosystem resilience;
- accommodate alteration;
- improve knowledge and facilitate knowledge transfer;
- Apply adaptive preservation organization.

Food and Agriculture

Climate change influences agriculture and food production in complicated ways. It influences food production directly through alterations in agro-ecological circumstances, indirectly through affecting growth and dispersal of incomes, and therefore the demand for agricultural products Lipper et al. [18]. Regarding the IPCC report, the adverse effects of climate alteration on agriculture will happen in the tropic and sub-tropics, in Sub-Saharan Africa, and in Central and South Asia principally. Yields from rain-fed agriculture in some African countries could decrease to 50% in 2020; while in some South Asian countries, there may be a substantial decrease of 25%. In Central Asia, crop yields could reduce by up to 30 percent by 2020

Mastrandrea et al. [19]. Furthermore, freshwater accessibility in these areas is anticipated to reduce and coastal areas will experience the highest risk because of increased flooding. For example, a sea level rise in Bangladesh is anticipated to affect more than 13 million people with a 26% decrease in national rice production.

There are urgent actions for agricultural systems to combat the climate change effects Campbell et al. [20]. The actions include:

- Extending agricultural private sector activity and public-private collaborations;
- Improving credit and insurance;
- Developing powerful local organizations and networking;
- Improving climate-informed advisories and early warning;
- Developing digital agriculture;
- Improving climate-resilience and low-emission practices and technologies;
- Developing prioritization and pathways of change;
- Enhancing capacity, and supporting policy and institutions.

Health

Global climate alteration endangers human health in many deep and far-reaching ways. Several parts of the world suffer extreme events such as droughts, heat waves, changing exposure to infectious illness, and further frequent natural disasters that put excess tension on an already overstressed health system. Furthermore, climate alteration endangers the basis of public health around the globe: adequate food and nutrition, safe water for drinking and sanitation, and safe houses to live in. Most of the low-income countries are at the highest risk from climate change in terms of existing public health challenges: for instance, malaria, diarrhea, malnutrition, acute respiratory infections, and other infectious diseases. Diverting restricted personnel and supplies away from these ongoing troubles to address future dangers from climate change might make things worse instead of better. The biggest health effects of climate alteration can be its effect on global nutrition. It is assessed that at least one-third of the problem of disease in poor countries is because of malnutrition, and approximately 16% of the global problem of disease is related to childhood malnutrition Watts et al. [21].

Climate alteration is also supposed to alter exposure to infectious disease, with waterborne disease outbreaks caused by a variety of

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organisms, and to cause a rise in food poisoning events. Furthermore, the distribution of vector-borne diseases, which impacts on approximately half the human population, is expected to change because of changes in temperature, humidity, and soil moisture. While there is some discussion about the net effect of climate alteration on the distribution of these diseases, there is little dispute that they are likely to disperse into areas where they have not been historically widespread Portier et al. [22].

The negative effects of climate change on health systems even appear before birth; with proof that exposure to heat-waves and air pollution during pregnancy can cause babies to be born too small, which affects their health throughout their life. Extreme heat also affects air pollution and allergen levels, with children being more susceptible to asthma, allergies and respiratory conditions Cutler et al. [23].

Some urgent actions to combat climate change effects on health include Austin et al. [24]:

- Developing strong and valuable actions to limit climate change e.g. control CO₂ by using green technology in order to decrease CO₂ emissions and decrease temperature, and avoid unacceptable risks to global health.
- Scaling up financing for adjustment to climate alteration: with public health measures to decrease the risks from extreme weather events, infectious disease, diminishing water resources, and food insecurity.
- Actions that can reduce both climate alteration and develop health; decreasing the number of deaths from cancer, respiratory and cardiovascular diseases that are produced by air pollution (presently over 7 million each year).
- Increasing awareness of the health impacts of climate alteration and the potential health welfare of low carbon pathways, between health professionals and the general public.

Financial Needs

While there is doubt about the cost of adaptation, the scale of the necessary finance is important. Numerous calculations, established on a rough hypothesis, have assessed the cost of adaptation in developing countries to vary from \$9 to \$86 billion per year. Regarding Article 4.4 of the UNFCCC, developed countries are needed to support developing countries in convening the costs of adaptation to the adverse impacts of

climate change. Developing countries usually concern about funding for adaptation plans for extreme events. So adaptation plans and urgent activities must add to Official Development Assistance (ODA) Bulkeley and Newell. [25].

Nevertheless, one current examination has discovered that developing countries received less than 10% of the funds assured from developed countries to assist them in adapting to the effects of climate change. This absence of action caused concern between international negotiators, who stated that a new global agreement on climate alteration is at risk if developed countries do not provide the compulsory funding available to deliver adaptation in developing countries. The failure to act is raising deep distrust between developed and developing nations, and adaptation funding is essential to re-establish trust. The simultaneous global financial crisis and risk of a global recession, have created doubt about the feasibility of raising significant financial supplies for climate action and adaptation around the world. Nevertheless, climate change will not stop because of a financial disaster. Moreover, financial catastrophe has shown that trillions of dollars of public funds could be organized in a very short time.

Climate change adaptation actions need more than tens of billions of dollars. Only a minor percentage of the funding in national incentive packages has been spent for the urgent activities to combat climate change effects. As some global leaders have mentioned, the financial crisis must not be applied as an excuse for incuriosity about climate change effects. Concerning the climate change effects at true time can be an important part of the resolution of the financial problems Robinson and Dornan. [26]. Developing new technologies with a low carbon economy is one of the solutions to mitigate the effects of climate change and also can provide new jobs and opportunities across an extensive variety of industries and services. Nevertheless, the ODA and other public funds did not provide the “new and additional” supplies needed to finance the urgent adaptation efforts of all developing countries. The current level of accessible funding for developing countries is below the most conservative cost valuation for urgent adaptation actions for climate change effects. Also, it is dispersed through several supplies and is assigned with no clear coordination.

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A major rise in financial support for urgent adaptation and better organization of international attempts is needed. Otherwise, the world will fail to provide immediate actions to deal with climate alteration effects in developing countries that are extremely susceptible to its effects Pickering et al. [27].

RESULTS AND DISCUSSIONS

In order to successfully adapt, national policy reactions must predict the unfavorable impacts of climate alteration and must be attached to a country's framework for economic growth and sustainable improvement. National governments should improve and apply incorporated policies and programs that create resilience and decrease the susceptibility of their populations; highlighting defensive local actions, to cope with the risks related to the effects of climate alteration.

The following urgent actions can combat the negative effects of climate change (especially in developing countries):

Adapting to a Changing Climate and Encountering a New Reality

Climate change are reflected in the implications of the need for adaptation and reform in both natural and human systems. Such adaptations are adjustable to balance and provide benefits from opportunities. Although individuals and society always adapt to these climatic changes, this adaptation is not sufficient to respond to the current and future climate change occurrence. Adaptation is classified into both theoretical and practical categories. In the theoretical compatibility, the responses can be divided into several sub-classes that represent factors, scheduling, and systems. Table 1 shows examples of compatibility measures for different classes of adaptation.

Table1. Urgent actions and adaptations to combat the effects of climate change

Natural system	Forecasted		Reaction
			<ul style="list-style-type: none"> • Changes during the growing season • Changes in ecosystem components • Destruction of wetlands
Human system	Public	<ul style="list-style-type: none"> • Buy insurance • The basic construction of residential buildings • Redesigning oil rigs 	<ul style="list-style-type: none"> • Changes in crop operations • Changes in premiums • Buy air conditioners
	Private	<ul style="list-style-type: none"> • Advance systems, new building codes • Design standards, incentives for relocation 	Compensation for subsidies and execution of construction codes

Independent adaptation can be done, through ecological changes in natural systems, through changes in the market or welfare services in human systems, instead of a conscious response to climate change. On the other hand, the adapted design is the result of a deliberate action based on the knowledge that the conditions have changed or are changing. The predicted adaptation takes place before its effects appear; while responsive adaptation occurs after the initial effects of climate change have been revealed.

Also, there can be a life-based differentiation in which the natural system or human system adapts. In human systems, public or private compatibility explains how private and public interests stimulate a decision for compatibility.

Compatibility in Action: Key Steps in Design Compatibility

The first step in adaptation planning is to identify current and future vulnerabilities and assess the climate risks. Vulnerability can be described as a stage in which a system is sensitive

or incapacitated in counteracting the negative impacts of climate change. The vulnerability of a system depends on its exposure, sensitivity and compatibility capacity. Vulnerability assessments include analysis the changes in socio-economic and environmental conditions, biophysical and socio-economic impacts from climate tensions and the capacity of a system's adaptation. In order to understand the potential for future vulnerability, the main factors need to be identified. In terms of assessing future climate risks, it may sometimes be possible to use scenarios and models to predict them.

After understanding the vulnerabilities and climate risks in a community or a region, the next step is to identify possible options for adaptation. These options can be designed to provide benefits under all possible future scenarios, including climate change; or may include measures taken to predict climate change. Table 2 shows some examples of possible measures to provide adaptation in response to different climate tensions.

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Table 2. Urgent actions according to different climate change events

Extreme event of climate change	Urgent adaptations
Drought	Collecting rainwater; water conservation and reducing its loss; ecosystem restoration; alternative agricultural operations such as replacing drought resistant products, storing seeds; economic diversification
Flood	Rehabilitation of vegetation around riverbeds; construction of residential houses and other buildings (schools, hospitals) above ground level; flood resistant roads; changes in crop production; land-use planning; forecasting systems
Sea level rises	Conservation and restoration of coastal swamps and marshes; construction of sea walls and coastal fortifications; taking into account the impacts of climate change on infrastructure design
Extreme increase in temperature	Timing and location of grazing livestock; shading trees; replacement of heat-resistant products; promotion of public health; control and eradication of diseases
Extreme winds, cyclones	Building and constructing wind-proof infrastructure; forest regeneration; wind turbine design; forecasting systems
Dust	Dust control by increasing plant of trees, cover the road with gravel, increase moisture content of the road surface

Nature of Complementary Reduction and Adaptability

Reducing climate change and adaption are not two separate categories, but are complementary sets that combine together to shape a general strategy to reduce greenhouse gases and climate change impacts. There are also methods for combining degradation and adaptation programs. For example, mangrove crops along a coastline will cause carbon capture by creating a buffer against terribly stormy waves. Also, reducing measures can increase the resilience and capacity of communities to adapt to changes in the local climate. Reducing climate change, both in preventing the degradation of natural habitats and deforestation, can have significant impacts on the biodiversity of soil and water conservation, and can be implemented with a sustainable economic and social approach. For example, forestry and sustainable bio-energy can help to rehabilitate degraded lands, manage runoff, conserve carbon in the soil, boost rural economies and increase their ability to adapt to the negative impacts of climate change.

Reconsideration of the Improvement Paradigm

Since climate change creates both a responsibility and an opportunity to regulate improvement strategies, novel thinking is required at both the global and local stages from national governments to improve arrangements. Leadership from an international level (for example the United Nations) is required in order to create a high-

level task force to produce a novel vision for global sustainable improvement Howes et al. [28].

This new vision should be established on a low-carbon economy, along with the analysis of the interconnections among the disasters the world has observed in current years, like energy, food, water, financial matters with the climate and the capacity of global public policy and institutions to deal with them concurrently.

Responsibilities for the Policy at Local, National and Global Levels

The highest political and administrative levels must direct the organization of national policy for adaptation, a disaster risk decrease, poverty mitigation, and human improvement. Local institutions must have the key responsibility for helping the poor and vulnerable areas and assisting them in making safe settlements, distributing suitable information, and shifting supplies professionally from global and national levels to local levels. Concentrating on the local level should not reduce the role of the national government. Actually, national governments should connect with remote areas and people much better than local government. Furthermore, using the knowledge and skills of local people is very important in the local level policy; in some regions, sometimes local people have managed climate variability for centuries. International organizations should develop more skills in

terms of reaching the local level directly and working side by side with local governments Nalau et al. [29].

Without feasible institutions and useful policy frameworks at the national level, progress on adaptation to climate alteration will fail. Distributing information, expressing requirements, developing knowledge, warranting accountability, and transferring supplies are directed through institutions.

Policy Tools to Promote Greenhouse Gas Emissions

At present, there are various strategies that, if implemented quickly, can reduce greenhouse gas emissions and consequently help to reduce the most severe impacts of climate change. Developers can create institutional, policy, legal and regulatory frameworks for empowerment, and an incentive to reduce emissions of greenhouse gases plays a vital role. Proper policy mixing with appropriate tools, including economic and legal guidelines, can overcome the economic, technological, informational and behavioral barriers in the market. The most important of these tools are:

- Integrated policies, including climate change, as a factor in broader policy development, to facilitate the implementation of reduction mechanisms.
- Legal standards provide certainty and stability on greenhouse gas emission levels and send a specific signal to prevent the "usual business" approach. By setting standards, the government can prohibit or attempt to replace materials that are damaging to the climate. For example, standards can be used for buildings (energy efficiency), fuel consumption by motor vehicles, energy efficiency in households, and fuel content.
- Reducing greenhouse gases from deforestation and forest degradation. Policy approaches and positive incentives are necessary for issues related to reducing these gases. There are also roles for conservation, sustainable forest management and forest carbon stock growth.
- Voluntary agreements are a tool for interaction between industry and the state; with volunteering roles in environmental actions. Theoretically, industries will be forced to take steps to reduce greenhouse gases if there are more costly legal controls.

Consideration of Benefits of Win-Win Policies in the Forestry Sector

Win-win policies can plan to combat climate change effects and can protect ecosystems. For instance, creativity to decrease deforestation and to encourage reforestation and the retrieval of degraded lands would achieve several purposes: isolating carbon from the atmosphere; developing food production; and creating employment, mainly for the poor and native people; and reinforcement of ecosystems and biodiversity. Large-scale international ingenuity is needed to decrease deforestation and boost reforestation and the retrieval of degraded lands. Then, the valuable transfer of supplies to local communities and people must be guaranteed Wang et al. [30].

Making Local Capacity for Food Security

Climate alteration is principally a multiplier of recognized hazards, such as food insecurity, which in the past infrequently was given adequate consideration or funding. For example, The World Bank, which is the biggest stockholder in agriculture, has paid slight attention to food security in the past. Also, even in the food security framework which is built by United Nations, there is still great potential for development.

There is a great intersection between the UN agencies, the Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), and the World Food Programme (WFP)—all directed to doubling attempts at food security Gyawali et al. [31].

Alternatively, the Consultative Group on International Agricultural Research (CGIAR) is a global organization working on innovative science to promote agricultural growth. The CGIAR can support the farmers from developing countries, where economic and environmental restrictions caused by the effects of climate alteration are present Clark et al. [32] and Keohane et al. [33].

Thus, centers for local adjustment in agriculture to improve and extensively distribute technologies for adaptation (for instance, cultivate salt- and drought-resistant crops) must be established through CGIAR, particularly in Sub-Saharan Africa, central Asia and South Asia.

Building up Public Health Structure and Supervision

The international community should create a significant commitment to assist lower-income countries in adjusting to the health threats from

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climate alteration via developing basic health facilities. The commitment will have the further advantage of assisting those countries where they have great challenges on their economies, even without the effects of climate change.

Although national governments accept the obligation to the health of their populations, international financial assistance must generate reinforcement of the developing countries especially, for public health structure and examination capacities.

Consideration of Adaptation Actions (In Terms of Financial Support) with both Short and Long-Term Goals

Numerous innovative supplies of funding have been suggested to finance adjustment requirements (Keohane, 2015). The important and possible financial supplies should be sufficient, expectable, and maintainable. The important financial actions include:

- Auctioning international productions and trading payments. Auctioning 2% of global payments can make between \$15 and \$25 billion per year. The consequential income might then be located in a fund to aid climate action, including adaptation in developing countries.
- International air passenger adjustment tax: by charging tax on international air passengers and using the tax as funding for adaptation activities in the poorest and most vulnerable countries.
- The action plans to create a minor passenger charge for the whole international flights; separated with regard to the level of travel (\$7 per economy and \$63 per business/first class trip)—which would increase among \$8 billion and \$10 billion yearly for adjustment in the first five years of process, and significantly more in the longer term.
- International marine release decrease scheme: it can be a “cap-and-charge” scheme that established on a carbon tax on fuel for international shipping that distinguishes various national conditions.

The action can generate US\$10 billion yearly for climate adaptation action in developing countries; and the adaptation can provide by decreasing currently free carbon dioxide emissions from international shipping. The tax can be obtained on the average market price of carbon. The predicted effect of the scheme on the final

users is just a percent rise in the price of imports to developed countries Dietz et al. [34].

In the short term, \$1 to \$2 billion from developed countries must immediately provide aid to developing countries that are most vulnerable to climate change and are already hurting from climate effects.

The funds must be applied to the development of the application of National Adaptation Programs of Action (NAPAs). Funds must be transferred to community-level governments, and NGOs.

The adaptation action can create a trust between developed and developing countries and in the long term can provide a new and comprehensive agreement on adaptation and mitigations plans for climate alteration.

Beginning at \$10 billion and increasing to \$50 billion can generate innovative and predictable supplies of funding, containing auctioning incomes from carbon markets and global market-established taxes; for instance, from international air travel and marine emissions’ decreases Bauer et al. [35].

CONCLUSION

This paper provides adaptation strategies against climate change impacts which can reconfigure development and economic growth strategies to take into account climate challenge. Some important parameters which are to be considered regarding the urgent actions to combat the negative impacts of climate change include: (1) Scale: match responses to the growing numbers of people in danger. (2) Speed: waste no time because climate change is happening faster than predicted. (3) Focus: manage risk, build the resilience of the world’s poorest citizens, and enhance the ecosystem functions on which they depend. (4) Integration: recognize the relationships among the environment, development and climate change; and manage synergies and trade-offs between mitigation and adaptation. Also, this paper provided urgent actions separately which needed key elements (e.g. ecosystems and natural resources, food and agriculture, health systems and financial needs) that are in the highest vulnerability level regarding climate change impacts. The results showed that performing urgent actions against climate change in the short term can make the performance easier and cheaper for the future.

Correct climate policies can contribute to the effective reduction of climate change and

adaptation, and may improve the outlook for employment, maintain economic growth, reduce poverty and achieve other economic and social benefits. Measures taken for climate change effects can provide more and better opportunities for pushing the country towards a green economy. They can also contribute to promoting human well-being and reducing inequalities in the long run, so that future generations will be less exposed to environmental hazards and ecological deficiencies. Factors that sustain our economies such as employment, environmental quality, equality and social justice (including the general quality of life) will place better benchmarks against policy performance and should be prioritized over the course of economic growth. The relationship between hydrological cycles is also closely related to climate change, especially the temperature of the planet. Modifying rainfall patterns, intensity, duration and frequency, increasing evapotranspiration and decreasing soil moisture are among the factors that are due to climate change.

Extreme events are happened and cause reducing in the water available to plants, animals and humans. This issue is more acute in developing countries like Iran due to its geographical, social and cultural contexts. It affects different sectors of agriculture, surface water and underground resources, health, biodiversity, as well as coastal areas such as the country's wetlands. Also, changing patterns of rainfall will lead to an intensification of the water crisis and the occurrence of very heavy floods that will have severe consequences. Therefore, correcting, developing and managing water correctly in order to adapt to climate change is essential. Also the most important issues about the urgent actions to combat the effects of climate change is financial limitations and lack of integration of climate change adaptation agreements and also weakness of perception of rural farmers which should consider in the urgent plans for adaptation of climate change.

KEY ISSUES AND FUTURE DIRECTIONS

Implementation to combat the effects of climate change needs funding resources; however, they are often beset by disputes over who should provide the funds and under what circumstances. A lack of funding can be a limitation to successful strategies, as there are no formal arrangements to finance climate alteration, development and implementation. Funding is often provided by nations, groups of nations and increasingly by NGOs and private sources.

These funds are often channeled through the Global Environmental Facility (GEF). This is an environmental funding mechanism in the World Bank which is designed to deal with global environmental issues needing proper consideration for the future.

CROSS REFERENCES

- Climate change impacts (Stocker et al) [32]
- Climate change adaptation (Barreca et al)
- Urgent action (Wise et al)
- Long term and short term actions (Engle et al)

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