

B.A. (Hons) Geography
Semester IV
Paper:
Sustainable Development
(Generic Elective)
Unit 4

(Note: Compilation from various sources such as scientific reports, research articles, websites and books for student reference)

UNIT 4

(Inclusive Development: Education, Health; Climate Change: The role of higher education in sustainable development; The human right to health; Poverty and disease; The Challenges of Universal Health Coverage; Policies and Global Cooperation for Climate Change)

Summary

'The term inclusive development has emerged in the 21st century and has been adopted in a series of scholarly and policy documents. Its roots, however, can be traced to different concepts in different disciplines. While some see inclusive development as only combining social aspects with economic growth through political approaches, many define inclusive development instead as focusing on social wellbeing and protecting the ecosystem services of nature through redefining political priorities, especially in the context of the Anthropocene. This term can potentially bridge different disciplines together.'

- *Inclusive development implies social, ecological and relational inclusiveness.*
- *Inclusive development has its roots in different disciplinary approaches.*
- *Inclusive development is used to counter exclusive capitalist approaches.*
- *Inclusiveness refers to how access to and allocation of basic resources is organized.*
- *Development refers to ecological and social wellbeing.*

Introduction

Over the past four decades, the World have become increasingly aware of environmental problems. The environmental issues since 1972 (when the first international conference on the environment problems was hold), has been only growing worldwide. The world institutions (like the United Nations Conference on Environment and Development (UNCED)) concentrate their attention on major global issues mostly including depletion of the Earth's protective ozone layer, destruction of tropical and old-growth forests and wetlands, species extinction, and the steady build-up of carbon dioxide and other "greenhouse" gases causing global warming and climate change. However, over four decade of efforts taken on overcoming the environmental problems very fable progress has been achieved. The UNEP reports offer evidence that the global environmental problems identified at the UNCED gathering back in 1992 have continued or worsened. With the exception of ozone depletion, an area in which major reduction in emissions has been achieved by international agreement, in addition, UNEP points to exposure to toxic chemicals and hazardous wastes, nitrogen pollution in freshwater and oceans, water contamination and declining groundwater supplies, forest and freshwater ecosystem damage, overexploitation of major ocean fisheries, urban air pollution and wastes. Underlying all these problems is the demography issue, including population growth which adds more than 70 million

people a year. The world population, which had passed 7 billion by the year 2015, is expected to grow to around 9 billion by 2030. Under urgent pressure of environmental destruction, scientists and politicians have begun to work on finding solutions for sustainable development.

The main research questions in this regard are: How to prevent irreversible damage to the planetary systems that supports life? How to avoid high environmental price caused by non-responsible behaviour of businesses? How to find a balance between economic development and environment operating the “environment-friendly” development concept? How to achieve inclusive development?

The notion of sustainable development encompasses economic, social and environmental goals with the use of sustainable techniques for better agricultural production, energy use, natural resource management, and industrial production. Today we have enough evidence to state that these techniques have significant potential, but have yet to be widely adopted. A sustainable global economy also implies limits on population growth and material consumption. The question of economic activity sustainability has already become the major issue, and will be even more important in the coming decades. Sustainable development has been defined in a variety of ways, but in practice it has three dimensions – economic, environmental and social ones.

Inclusive Development

Definitions

Ideas of inclusive development have emerged in the second half of the twentieth century, focusing on different levels including the Individual, States and international relations. After World War II, the political, economic and social rights of humans gained recognition at the international level. Two key human rights declarations were adopted in 1966 to protect the most vulnerable and marginalized and ensure the dignity of all humans—one on political rights, the other on economic and social rights (UN 1998). Progress within the human rights domain during the past six decades culminated in the recognition of the human right to Water and sanitation services in two declarations by the United Nations General Assembly (UNGA 2010) and the United Nations Human Rights Council (UNHRC 2010), both in 2010.

In the aftermath of colonialism, many developing countries were struggling to regain control and sovereignty over their natural resources. They also felt that the international trade and financial system was loaded against their interests, that there was a core controlling the periphery, and that there was a need for a new, more inclusive, international economic order. Although three legal instruments on the New International Legal Order were adopted in the 1970s, these were eventually not implemented, much to the disappointment of the developing countries. Yet, the establishment of

the Group of 77 (G-77) in 1964 and the least developed countries (LDCs) category in 1971 (UN Resolution 2768, XXVI) helped to provide negotiating space to these countries and prioritize some of their concerns (see also Sustainable development). Modernization theories promoting economic growth fuelled by technology and capital transfer have been advocated by scholars and aid agencies since the 1950s. Disappointment with the failure of trickle-down theories led scholars and policymakers to focus on improving per capita income and strategies for creating employment and rejuvenating the depressed sectors (e.g., rural) and localities (e.g., peri-urban) in the 1970s. With the developing country debt crises in the 1970s and the enforcement of structural adjustment programs and fiscal discipline in the 1980s, subsidized Health, education and Poverty reduction programs often had to be cancelled, leading to an aggravation of poverty and exclusion of vulnerable actors. During the 1990s, the focus therefore shifted to human development, reducing poverty and increasing entitlements. Meanwhile, societies were becoming aware of the growing importance of dealing with environmental problems. These economic, social and environmental issues became the three dimensions of Sustainable development. However, sustainable development is difficult to achieve and trade-offs are often made. Against the backdrop of these difficulties, the inclusive development concept was launched as a way to put stronger emphasis on the poorest and most.

‘Inclusive development’ was used in academic literature for the first time in 1998, but only become an integral part of that literature from 2008 onwards. While there are significantly more articles using ‘inclusive growth’ rather than ‘inclusive development’, most publications use the two terms interchangeably (Fig.1).

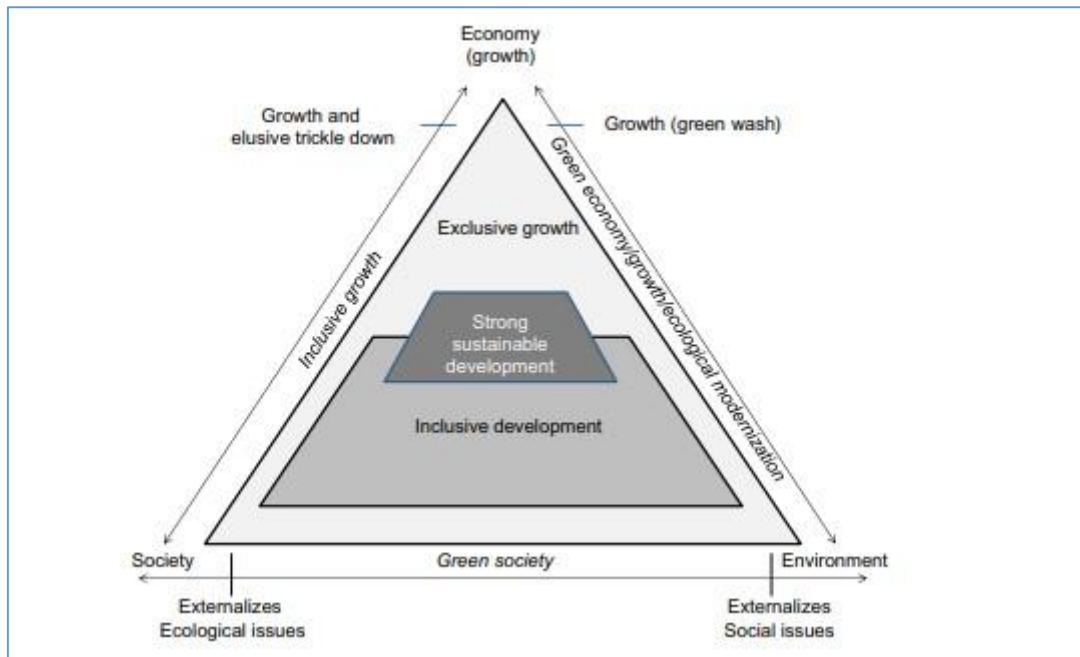


Fig. 1 Inclusive Development

Although the concept of sustainable development has reached centre stage in international scholarly attention and the policy arena with the adoption of the Sustainable Development Goals (SDGs) in 2015 by the United Nations General Assembly, the room for trade-offs that this concept allows, is intensely debated. While strong sustainable development allows no trade-offs between the social, ecological and economic aspects and between current and future generations, experience shows that vested interests can interpret sustainable development to further their own interests leading most often to weak sustainable development in favour of economic growth. The sustainable development concept allows neoliberal capitalists, social wellbeing scholars and environmentalists to formulate the trade-offs towards their own interests leading to a tug of war between these schools of thoughts. This has led to the birth of the concept of inclusive development, which had its roots in social justice and social movements, and focused on the participation, human rights and social demands of the most marginalized people and communities. Second, the poorest and marginalized are also those who depend on natural resources such as land, water, fish and forests, while they are also those who are the most vulnerable to the impacts of climate change, land and resource grabbing, and run the risk of stranded resources (i.e., that they may not deforest or use their oil resources because of new knowledge regarding the impacts of doing so).

Thus inclusive development is about social, environmental and relational inclusiveness, and defines development as enhancing ecological and social wellbeing rather than as growth. The term 'inclusive' has been mentioned 52 times in the UN Global Sustainable Development Report 2015 and represents

the effort by social justice and environmental actors to bring the centre of gravity of the trade-offs between social, environmental and economic issues towards social and environmental goals.

Social Inclusiveness: The human right to health; Poverty and disease; Education

Social inclusiveness takes some ecological or relational aspects into account and aims to end all forms of poverty everywhere, recognizes that poverty is not simply measured in income per capita and that it is also not exclusively located in poor countries. It specifies targets for eradicating extreme poverty, ensuring social protection systems including floors, and ensuring access to basic resources. These social floors are further elaborated in SDG 2 which aims to end hunger and malnutrition by 2030, while doubling the productivity and incomes of small-scale food producers; and in Goal 3 which aims at enhancing well-being and healthy lives through targets on reducing maternal mortality, preventable deaths of children, and major epidemics, managing substance abuse and traffic related deaths, and universal access to sexual and reproductive health care services and health coverage by 2030. Social floors also include Goal 4's focus on inclusive and equitable education through universal completion of primary and secondary education, access to pre-primary education, and opportunities to enhance vocational and lifelong learning by 2030. Similarly, Goal 6 aims to ensure universal access to water and sanitation. Goal 7 ensures universal access to affordable, reliable, sustainable and modern energy, while Goal 8 promotes universal employment opportunities. Goal 9 focuses on resilient and sustainable infrastructure with affordable and equitable access for all and inclusive and sustainable industrialization. It aims to integrate small-scale enterprises into value chains. Goal 5 focuses on gender equality by eliminating discrimination, violence, harmful social practices, recognizing the value of unpaid care, promoting participation, and promoting access to sexual and reproductive health rights. Goal 10 aims at reducing inequalities within and among countries to achieve social, economic and political inclusion. Goal 11 is likewise defined by inclusive aspirations in cities and human settlements to make them safe and resilient. It guarantees access to housing, basic services, and transportation, but with special attention for women, children, people with disabilities and older persons. Goal 15 refers also to sustainable livelihoods for local communities so that they can avoid relying on poaching and trafficking of protected species for income. Finally, Goal 16 promotes inclusive societies and institutions aiming to reduce violence and death, abuse, trafficking and torture of children, provide legal identity and birth certificates to all, ensure participatory decision-making, guarantee access to information, and protect fundamental freedoms. Most targets are national-level targets with primarily national-level responsibilities. Goal 10 has very specific global (target 10.5, 10.6, 10.a, 10.b), transnational or non-territorial (target 10.7, 10.c), and national (10.1, 10.2, 10.3, 10.4) aspects while also incorporating global (migrant) and national populations. While these goals clearly

meet two of the five principles—namely that of (a) enhancing the level of protection for the poor/marginalized and small-scale sector; and (b) enhancing development opportunities for all to a limited extent—there is little emphasis on including the knowledge of all, or engaging all, or promoting effective capacity building to enable better participation.

The Challenges of Universal Health Coverage

In 2005, the World Health Assembly issued a call on member states for universal health coverage (UHC), with an aim to achieve affordable and accessible medical care for all citizens. Universal health coverage assures all types of health service and protects all citizens financially in any conditions due to illness. Globally, the UN sustainable development goal (SDG) provides high priority for UHC as a health related goal. Universal health coverage (UHC) is a broad concept that has been implemented in several ways. The common denominator for all such programs is some form of government action aimed at extending access to health care as widely as possible and setting minimum standards. Universal health care should be implemented through legislation, regulation and taxation. In UHC, all people can use the health promotion, prevention, assistance, rehabilitation and palliative care services that they need, in sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship. UHC involves three coverage dimensions – health services, finance, and population – and is a dynamic, continuous process that changes in response to shifting demographics, epidemiological and technological trends, as well as people’s expectations. There is an equal importance in quality health service, financial management and assurance of health service with equity and access.

There is gross inequality in health status between developing and developed countries, poor and rich, male and female and other groups. Beyond health inequalities, approximately 44 million households, or say more than 150 million individuals worldwide, face catastrophic health-care expenditures; of these, about 25 million households containing more than 100 million people are pushed into poverty by these costs. Beyond the different constraints, Nepal has achieved satisfactory public health service coverage (> 85% child vaccine coverage, > 50% skilled birth attendance and significant reduction in communicable diseases). There are yet many challenges facing the delivery of high-quality medical services without a financial burden to the entire population. More than two-third of the population depend on out-of-pocket expenditure, even for simple communicable disease like the Kala-azar, people who are bearing catastrophic medical expenditures due to expensive private care and higher costs for medicines. To address these problems, there are different approaches like community-based health insurance, free health services, community drug programs and subsidy to disadvantaged and minority populations. However, all of these initiatives have been piloted at different times in the past

and have not established a successful model. Therefore, there is need to think of UHC in a different way by designing a scheme for financial protection that covers to all marginalized population, quality health services, and provides comprehensive challenges including the new and re-emerging diseases.

Ecological Inclusiveness

ecological inclusiveness Eleven goals focus on ecological inclusiveness, marking a shift away from the MDG targets and towards recognizing the interrelationships between exclusion, marginalization and an overburdened environment. They set targets on production and consumption patterns (Goal 12) including sustainable and resilient agricultural practices, maintaining Sustainable development goals and inclusive development ecosystem services and adaptation to climate change, genetic diversity and securing seed and plant banks (Goal 2), demand side management through energy efficiency and supply side management through promoting renewable energy (Goal 7), resource efficiency, decoupling growth from pollution (Goal 8) and sustainable industrialization (Goal 9); and on enhancing the quality of life by providing access to open and green spaces for all, sustainable transport systems, sustainable urbanization, sustainable human settlement planning, and improving air quality and waste management within sustainable and resilient cities (Goal 11). These targets also focus on sustainable water management from local to global levels (Goal 6 and 14), mitigating climate change (Goal 13), and protecting ecosystems and forests (Goal 15). Perhaps most significant for the prospects of ensuring ecological inclusiveness is target 15.9 which calls for mainstreaming the principle of ecosystem protection into international, national, and local development agendas. In terms of building resilience, Goals 11 and 13 call to minimize exposure to disasters and enhance resilience and adaptive capacity, not least through emphasizing the importance of land and resource ownership of the poorest (Goal 1). Different levels are addressed in the need to adopt sustainable practices including the state, the private sector, local economies depending on tourism, and populations. Key to these steps is also the effective mobilization of financial resources and the role of international law. Thus some of these goals (a) establish eco-centric targets, if vague in qualitative and quantitative terms; (b) focus on building resilience and adaptive capacity; and (c) regulate financial institutions. However, few if any deal with the other principles of allocating rights, responsibilities and risks between countries, or how to 'green' international cooperation institutions. There is also not enough guarantee of the participation of all stakeholders.

The role of higher education in sustainable development

Education for sustainable development is not an option but a priority, especially in higher education. In recent years, public attention regarding sustainability has spread worldwide, and, in many ways, higher education has led this “green” movement. The recognition that education, at all levels, can be a powerful tool in promoting sustainable development led to the concept of ‘education for sustainable development’. Subsequently, in 2002, the United Nations declared 2005-14 as the Decade of Education for Sustainable Development, with the objective of integrating the principles and practices of sustainable development into all aspects of education and learning, and appointed UNESCO as the lead implementing agency.

But what is ‘sustainable development’ and what is the role of higher education in promoting it? Sustainable development is a concept that is not new, and yet it is complex and not easy to define. In 1987, the Brundtland report from the World Commission on Environment and Development defined it as “meeting the needs of the present without compromising the ability of future generations to meet their own needs”. This remains the most quoted definition, although there is continuous evolution in the way sustainable development is operationalised.

The International Association of Universities, or IAU, has been active in encouraging universities to promote sustainable development since the 1990s and, in 1993, adopted a policy statement known as the Kyoto Declaration on Sustainable Development. Although this declaration dates back to over two decades, it is remarkably comprehensive and outlines all the fundamental issues concerning the role of universities in promoting sustainable development. The opening clause urges universities to seek, establish and disseminate a clearer understanding of sustainable development. The IAU has continued to maintain sustainable development as one of its key action areas and has developed an online portal on Higher Education for Sustainable Development in order to encourage higher education institutions around the world to network and showcase their activities through the portal.

Progress and challenges

As the end of the Decade of Education for Sustainable Development was approaching, UNESCO prepared a report that provides a summary assessment of progress achieved during the Decade and the challenges encountered. With regard to higher education, the report mentions that higher education institutions have stepped up their efforts to support sustainable development, have made significant efforts to address sustainability in campus operations (commonly referred to as campus greening), have introduced new programmes and courses related to education for sustainable development, and are extending the value and impact of their teaching and research to their respective communities.

Perhaps the most impressive outcome during the Decade has been the creation of networks of institutions in all the world regions – MESA in Africa, ProsPER. Net in Asia-Pacific, COPERNICUS Alliance in Europe, ARIUSA in Latin America and the Caribbean – in order to build capacity, share experiences and expand the influence of education for sustainable development. More recently, the United Nations Environment Programme, or UNEP, created the Global Universities Partnership on Environment for Sustainability – GUPES – a network of 370 universities across the globe to implement environment and sustainability practices into the curricula.

However, the report also highlights challenges. These include:

- the lack of a coordinated approach at all the levels of the institution to implement the necessary changes;
- insufficient staff development activities to empower staff to transform curricula and pedagogy towards a sustainable development perspective; and
- the persistence of disciplinary boundaries that inhibit the potential to address complex sustainable development issues.

Global action

The question of what happens to Education for Sustainable Development after the end of the Decade inevitably cropped up. In 2014, after broad consultations with and inputs from a wide range of stakeholders, UNESCO came up with the post-Decade of Education for Sustainable Development Global Action Programme, or GAP on education for sustainable development, and a roadmap for implementing it. The GAP is generic in nature and applies to all levels of education. It identifies five priority action areas:

- mainstreaming education for sustainable development in both education and sustainable development policies;
- transforming learning and training institutions by integrating sustainable development principles in daily activities;
- building capacities in educators and trainers;
- empowering and mobilising youth; and
- accelerating the implementation of sustainable solutions at local and community levels.

In order to mark the final year of the Decade of Education for Sustainable Development, two major back-to-back conferences on education for sustainable development were organised in Aichi-Nagoya in Japan in November 2014. The first was the International Conference on Higher Education for Sustainable Development, hosted by Nagoya University and organised by the United Nations University with the support of the government of Japan and various organisations, including UNESCO,

UNEP and IAU. The conference felt that there was a need for higher education institutions to adopt a 'whole-institution approach', including transformative leadership, encouraging capacity development and undertaking an assessment of the institution for sustainability. The conference also proposed that institutions engage with different types of knowledge and work with critical community groups such as youth and the private sector, and engage with policy issues.

In the ensuing Nagoya Declaration on Higher Education for Sustainable Development, participants renewed their commitment to support activities towards sustainable development, including implementation of the Global Action Programme and called on world leaders to recognise the essential role and responsibility of higher education institutions towards creating sustainable societies. Immediately following the International Conference on Higher Education for Sustainable Development came the World Conference on Education for Sustainable Development, a major event organised by UNESCO and the government of Japan and attended by nearly 1,000 participants.

Although the conference covered the whole range of education and learning, most of the workshops and sessions were directly or indirectly relevant to higher education, such as teacher education, lifelong learning and information and communications technology. Similarly, in the sessions dealing with global sustainable development challenges such as water security, renewable energy, biodiversity, urbanisation, etc, it was clear that the involvement of higher education institutions would be crucial. A declaration on Education for Sustainable Development was adopted at the end of the conference, calling for the commitment to education for sustainable development of all stakeholders and inviting governments to allocate substantial resources to enable the implementation of the GAP priority actions.

From development to sustainability

Higher education has played an important role in promoting sustainable development during the Decade that has just ended, and it is vital that it continues to do so in the post-2014 implementation of the GAP. This is particularly important in view of the post-2015 Development Agenda that is currently being formulated by the UN. Indications are that the eight Millennium Development Goals will be replaced by 17 Sustainable Development Goals, or SDGs, explicitly linking development to sustainability. A glance at the proposed draft SDGs shows that their implementation will require substantial inputs from higher education. This must be recognised by the relevant UN agencies, the governments and, as importantly, by higher education institutions themselves.

Institutions now have the responsibility, more than ever before, to integrate sustainable development into all their teaching, research, community engagement and campus operations.

Policies and Global Cooperation for Climate Change

This section provides the information and ways in which agreements and instruments for international cooperation to address global climate change have been and can be organized and implemented, drawing upon evidence and insights found in the scholarly literature (Fig. 2). (Detailed explanation and analysis is presented in Unit 5 including SDG and other initiatives.)

International cooperation is necessary to significantly mitigate climate change impacts (robust evidence, high agreement). This is principally due to the fact that greenhouse gases (GHGs) mix globally in the atmosphere, making anthropogenic climate change a global commons problem. International cooperation has the potential to address several challenges: multiple actors that are diverse in their perceptions of the costs and benefits of collective action, emissions sources that are unevenly distributed, heterogeneous climate impacts that are uncertain and distant in space and time, and mitigation costs that vary.

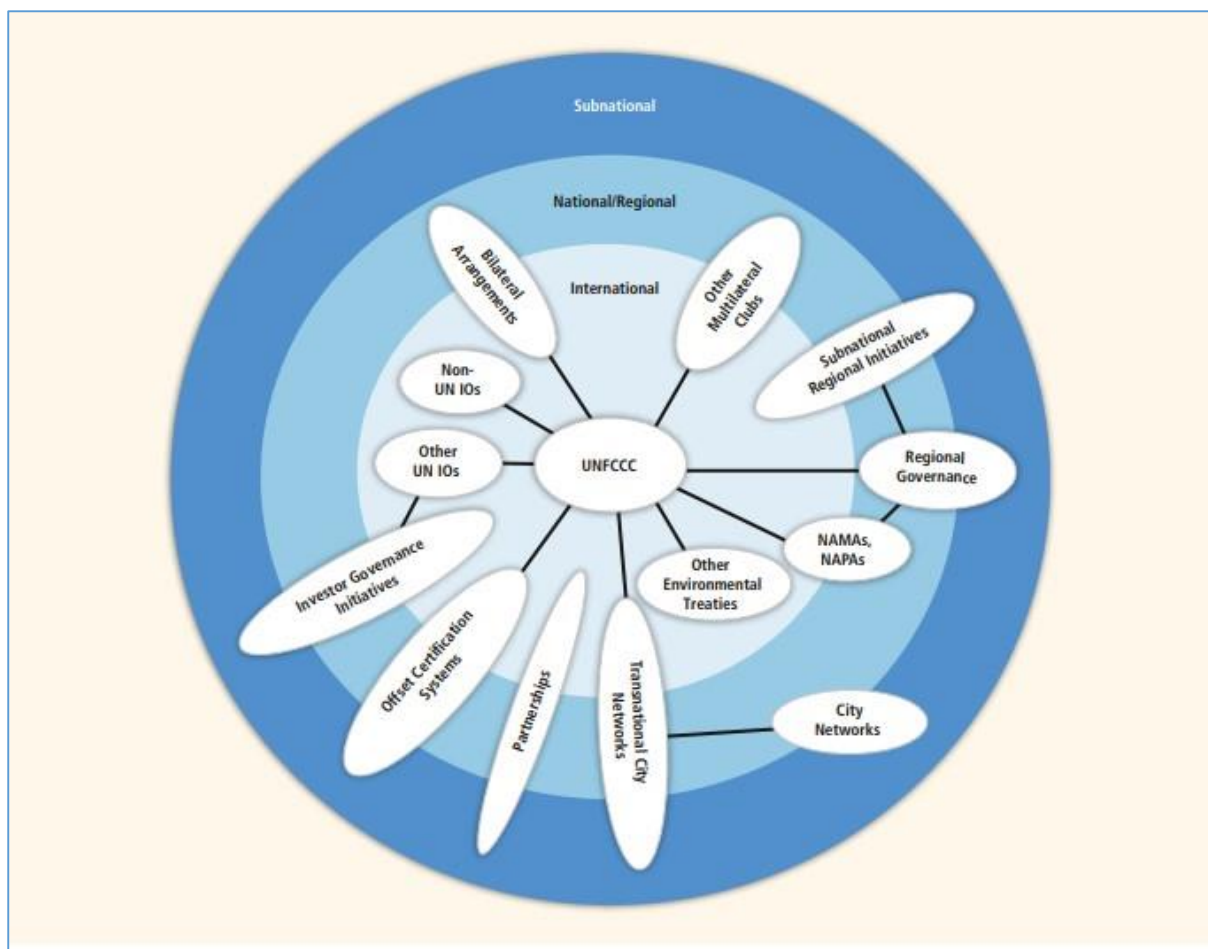


Fig. 2 The landscape of agreements and institutions on climate change

International cooperation on climate change has become more institutionally diverse over the past decade (robust evidence, high agreement). The United Nations Framework Convention on Climate

Change (UNFCCC) remains a primary international forum for climate negotiations, but other institutions have emerged at multiple scales: global, regional, national, and local, as well as public-private initiatives and transnational networks. This institutional diversity arises in part from the growing inclusion of climate change issues in other policy arenas (e.g., sustainable development, international trade, and human rights). These and other linkages create opportunities, potential co-benefits, or harms that have not yet been thoroughly examined. Issue linkage also creates the possibility of forum shopping and increased negotiation costs, which could distract from or dilute the performance of international cooperation toward climate goals.

Existing and proposed international climate agreements vary in the degree to which their authority is centralized (robust evidence, high agreement). The range of centralized formalization spans: strong multilateral agreements (such as the Kyoto Protocol targets), harmonized national policies (such as the Copenhagen/Cancún pledges), and decentralized but coordinated national policies (such as planned linkages of national and sub-national emissions trading schemes). Additionally, potential agreements vary in their degree of legal bindingness. Three other design elements of international agreements have particular relevance: goals and targets, flexible mechanisms, and equitable methods for effort sharing.

The UNFCCC is currently the only international climate policy venue with broad legitimacy, due in part to its virtually universal membership (robust evidence, medium agreement). The UNFCCC continues to develop institutions and systems for governance of climate change.

Non-UN forums and coalitions of non-state actors, such as private businesses and city-level governments, are also contributing to international cooperation on climate change (medium evidence, medium agreement). These forums and coalitions address issues including deforestation, technology transfer, adaptation, and fossil fuel subsidies. However, their actual mitigation performance is unclear.

International cooperation may have a role in stimulating public investment, financial incentives, and regulations to promote technological innovation, thereby more actively engaging the private sector with the climate regime (medium evidence, medium agreement). Technology policy can help lower mitigation costs, thereby increasing incentives for participation and compliance with international cooperative efforts, particularly in the long run. Equity issues can be affected by domestic intellectual property rights regimes, which can alter the rate of both technologies transfer and the development of new technologies.

United Nations Framework Convention on Climate Change (UNFCCC) The 1992 UNFCCC is the primary framework for international climate change cooperation. Its overarching objective is to stabilise greenhouse gas concentrations at a level that would prevent dangerous human induced

interference with the climate system. The Convention is a framework document augmented and updated by subsequent agreements, including the 1997 Kyoto Protocol and the 2015 Paris Agreement.

The Paris Agreement

The Paris Agreement was adopted in 2015 and was ratified by enough countries for it to enter into force less than a year later – a record in international law. This historic agreement set in place a durable and dynamic framework requiring all Parties to take climate action.

Under the Paris Agreement, countries have agreed:

- A global goal to limit average temperature increase to well below 2°C above pre-industrial levels and pursue efforts to keep warming below 1.5°C
- All countries will make nationally determined contributions to reduce emissions, and review their efforts every five years, to build ambition over time
- Robust transparency and accountability rules that will provide confidence in countries' actions and track progress towards targets
- The importance of adaptation and resilience to climate impacts
- Developing countries will receive financial, technological and capacity building support.

At the 2018 UN Climate Conference in Katowice, Parties adopted a comprehensive set of rules to implement the Paris Agreement. This includes a common transparency framework that will allow all Parties to report to their fullest ability, which will provide mutual trust and confidence to drive collective action. Rules on international carbon markets are due to be concluded at the UN Climate Conference in Chile at the end of 2019.

The Kyoto Protocol

The Kyoto Protocol binds developed country Parties to targets to limit and reduce greenhouse gas emissions – known as Quantified Emissions Limitation or Reduction Obligations (QELROs). The Kyoto Protocol was the first binding step toward implementing the principles and goals provided by the UNFCCC, but it has had limited effects on global emissions because some countries did not ratify the Protocol, some Parties did not meet their commitments, and its commitments applied to only a portion of the global economy. The flexible mechanisms under the Kyoto Protocol have generally helped to improve its economic performance, but their environmental effectiveness is less clear

Cancun Agreements

The Cancun Agreements were adopted in 2010 and run in parallel with the Kyoto Protocol's second commitment period. Countries put forward nationally determined 2020 emissions reduction targets,

or pledges, in the form of nationally appropriate mitigation actions. Recent UNFCCC negotiations have sought to include more ambitious mitigation commitments from countries with commitments under the Kyoto Protocol, mitigation contributions from a broader set of countries, and new finance and technology mechanisms

Montreal Protocol

The Montreal Protocol, aimed at protecting the stratospheric ozone layer, has also achieved significant reductions in global GHG emissions. The 1987 Montreal Protocol addresses the depletion of the ozone layer by harmful substances such as hydrofluorocarbon (HFC) emissions – powerful synthetic greenhouse gases widely used in refrigerators, air conditioners, fire extinguishers and insulating foam. Australia was among the early countries to sign up to the Montreal Protocol and has often gone well beyond its requirements.

International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO)

International civil aviation and maritime transport represents a significant source of greenhouse gas emissions, which are not directly addressed under the UNFCCC. International aviation accounts for around 1.3 per cent of global emissions and international shipping around 2.2 per cent. Australia works with other countries to address these emissions through the International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO).

In 2013, ICAO agreed to achieve carbon neutral growth from 2020 through a basket of measures, including a market-based measure, improved fuel efficiency and sustainable alternative fuels. Australia has supported ICAO to adopt a Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) requiring airlines to purchase offsets if industry emissions increase above 2020 levels, and welcomed the adoption in 2018 of rules for its operation. Australia will participate in the CORSIA from its commencement in 2021. In 2018, the IMO adopted an initial strategy on the reduction of greenhouse gas emissions from ships. Parties agreed that emissions should peak as soon as possible and to reduce total annual emissions by at least 50 per cent by 2050 compared to 2008, while at the same time, pursuing efforts towards phasing them out entirely. Parties have identified candidate short-, mid- and long-term emissions reduction measures with possible timelines. These would build on the mandatory energy efficiency measures which have been in place since 2011.

Mission Innovation

Mission Innovation, a group of countries committed to doubling governmental investment in clean energy innovation over five years, at the 2015 Paris Climate Conference. Mission Innovation members are collaborating around a set of innovation challenges to accelerate technology breakthroughs in

priority areas: smart grids; off-grid access to electricity; carbon capture and storage; sustainable biofuels; converting sunlight; clean energy materials; affordable heating and cooling of buildings; and hydrogen.

International Solar Alliance (ISA)

Increasing interest in solar radiation management (SRM) and carbon dioxide removal (CDR) as strategies to mitigate the harms of climate change, pose new challenges for international cooperation. The International Solar Alliance (ISA) was launched at the 2015 Paris Climate Conference, aiming to promote the roll out of solar technology, particularly in countries that have high solar resources but under-developed electricity access. Australia is a founding member of the ISA and has committed to share its knowledge and expertise for capacity building in other ISA Members.

Intergovernmental Panel on Climate Change (IPCC)

Australia's engagement in the Intergovernmental Panel on Climate Change (IPCC) supports the development of high quality Assessment Reports and associated Special Reports, which will be a key input into the Paris Agreement's Global Stocktake.

Action on Rainforests

At the first Asia-Pacific Rainforest Summit in Sydney in 2014, Australia led the establishment of the Asia-Pacific Rainforest Partnership. The Partnership promotes action and provides a platform to progress activities to reduce emissions from deforestation and forest degradation in the Asia-Pacific Region. As part of the Partnership, biennial summits are held that bring together leaders in government, the private sector, research and civil society. Following the inaugural Summit in Sydney, a second summit was held in Brunei Darussalam in August 2016 and a third in Yogyakarta, Indonesia in April 2018.

Action on Marine Ecosystems

Australia launched the International Partnership for Blue Carbon at the 2015 Paris Climate Conference. The Partnership raises awareness about the important role of coastal blue carbon ecosystems in climate action and strengthens co-operation between governments, research bodies and intergovernmental organisations to protect and restore them.

International Coral Reef Initiative (ICRI) is the world's coral reefs saving initiative. It is more resilient, complemented by Australia's world leading Reef 2050 Plan for the protection of the Great Barrier Reef. Australia is a founding member of ICRI and will co-chair (with Monaco and Indonesia) until July 2020. Australia is providing \$2 million to build the capacity of developing country members of ICRI to better manage and protect their coral reefs.

Climate and Clean Air Coalition

Climate and Clean Air Coalition brings together more than 100 partners to reduce and avoid emissions of fast acting pollutants, such as methane, hydrofluorocarbons and black carbon.

Climate change has wide-ranging impacts. That is why actions to combat it must be incorporated into all aspects of societal policy, including foreign policy, security policy, trade policy and development policy. The consequences of climate change burden poor developing countries the most seriously. The policies discussed in the section tries to reduce the impact of climate change and save the planet.

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