



**DASAR PERUBAHAN
IKLIM
NEGARA**

**NATIONAL POLICY ON
CLIMATE CHANGE**



Kementerian Sumber Asli dan Alam Sekitar Malaysia
Ministry of Natural Resources and Environment Malaysia



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**NATIONAL POLICY ON
CLIMATE CHANGE**

**Diluluskan Oleh Jemaah Menteri
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Ministry of Natural Resources and Environment Malaysia

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KATA ALUAN/ MESSAGE

**Perdana Menteri Malaysia
Prime Minister of Malaysia**

Malaysia sentiasa menyokong dan mengamalkan pembangunan lestari yang berlandaskan kepada pertumbuhan ekonomi, kesejahteraan sosial dan perlindungan alam sekitar. Pembangunan lestari merupakan asas kejayaan yang telah dinikmati oleh negara ini. Namun demikian usaha ini harus diteruskan lagi supaya potensi sebenar negara benar-benar dapat dipenuhi.

Perubahan iklim kini merupakan fenomena yang nyata. Secara saintifiknya kesan perubahan iklim sudah mula menjejaskan kesejahteraan kita semua. Menurut kajian-kajian yang telah dilaksanakan oleh Kementerian Sumber Asli dan Alam Sekitar, impak akibat perubahan iklim di masa hadapan akan menjadi satu cabaran dalam usaha kita mengekalkan kelestarian negara. Dalam menangani cabaran perubahan iklim ini, setiap individu mempunyai peranan masing-masing, namun bagi memastikan penyelesaian yang berkesan, pendekatan yang diambil perlu melibatkan semua pihak dan secara bersama.

Oleh yang demikian, Dasar Perubahan Iklim Negara yang telah dihasilkan ini berperanan sebagai rangka kerja untuk menggerakkan serta memberikan panduan kepada agensi kerajaan, industri, komuniti serta pihak berkepentingan

Malaysia has always advocated sustainable development, taking into account economic growth, societal well-being and environmental protection in its development planning. Sustainable development has been the foundation for the success of this wonderful country. Notwithstanding this, there is more to be done to achieve the full potential of the nation.

Climate change is no longer a distant possibility. It is now a scientifically proven reality that is already affecting all of us. Studies conducted under the auspices of the Ministry of Natural Resources and Environment Malaysia have given us a glimpse of future climate change scenarios and potential threats to the sustainability of our nation. In addressing the challenges of climate change, everyone has a role to play but to be successful we must all act in unison.

Thus, the National Policy on Climate Change provides the framework to mobilise and guide government agencies, industry, community as well as other stakeholders and major groups in addressing the challenges of climate change in a holistic manner. The National Policy will enable all of us to take concerted actions and identify opportunities that can help navigate the nation towards sustainability.

dalam menghadapi cabaran perubahan iklim secara holistik. Dasar ini akan membantu mengenal pasti tindakan secara bersepadu yang perlu diambil bagi mencapai matlamat pembangunan lestari.

Kerajaan harap semua rakyat Malaysia dapat memberikan sokongan terhadap pelaksanaan Dasar Perubahan Iklim Negara dan bersama-sama melaksanakan tanggungjawab kita untuk melindungi Bumi ini bagi generasi akan datang.

The Government call on all Malaysians to come together to support the implementation of the National Policy on Climate Change and fulfil our obligations as stewards of the Planet and guardians of future generations.



.....
(Dato' Sri Mohd Najib Tun Haji Abdul Razak)

Perdana Menteri Malaysia
Prime Minister of Malaysia



PRAKATA / FOREWORD

Menteri Sumber Asli dan Alam Sekitar, Malaysia
Minister of Natural Resources and Environment Malaysia

Perubahan iklim merujuk kepada perubahan-perubahan di dalam iklim dunia yang memberikan impak kepada manusia dan ekosistem sama ada secara langsung atau tidak langsung. Adalah dijangkakan, kesan negatif perubahan iklim tidak dapat dielakkan lagi sehingga beberapa dekad akan datang dan tindakan mitigasi yang diambil hanyalah bertujuan untuk mengurangkan impak fenomena tersebut. Bagaimanapun, sekiranya tiada langkah-langkah mitigasi dilaksanakan, sistem semula jadi bumi tidak akan mampu untuk menyesuaikan dengan kesan perubahan iklim. Di peringkat ini, sebarang tindakan adaptasi yang diambil akan melibatkan kos sosial dan ekonomi yang amat tinggi. Sehubungan itu, Dasar Perubahan Iklim Negara mengesyorkan supaya tindakan adaptasi dan mitigasi dilaksanakan secara bersepadu dan menyeluruh.

Dasar Perubahan Iklim Negara berperanan sebagai satu rangka kerja untuk menggerakkan dan memberikan panduan kepada agensi kerajaan, industri, komuniti dan juga pihak berkepentingan dalam menghadapi cabaran perubahan iklim secara menyeluruh dan bersepadu. Dasar ini menitikberatkan pengukuhan keupayaan negara agar impak perubahan iklim dapat dikurangkan di samping menggalakkan langkah mitigasi yang boleh mempertingkatkan pembangunan secara lestari.

Kerajaan sedar bahawa impak perubahan iklim merentasi semua peringkat, sektor, pihak serta

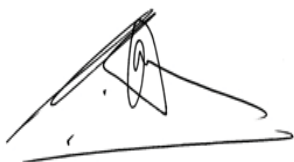
Climate change is any change in climate over time that directly and indirectly affects humans and their activities as well as natural systems and processes. It is envisaged that even with the most stringent implementation of mitigation measures, the impacts of climate change in the next few decades cannot be totally avoided. On the contrary without mitigation, the impacts of climate change are likely to be greater thus making adaptation impossible for some natural systems, while for most human systems it would involve very high social and economic costs. The National Policy on Climate Change promotes the implementation of both adaptation and mitigation in an integrated and balanced manner.

The National Policy serves as the framework to mobilize and guide government agencies, industry, community as well as other stakeholders and major groups in addressing the challenges of climate change in a concerted and holistic manner. Emphasis is on strengthening capacity of the nation to reduce its vulnerability to climate change whilst promoting mitigation responses that also enhance sustainable development.

The Government recognises that the impacts of climate change transcend all levels, sectors, stakeholders and major groups. Therefore, institutional capacity for implementation can only be made effective through collaborative

kumpulan berkepentingan. Oleh demikian, pengukuhan keupayaan institusi pelaksana perlu dipertingkatkan secara berkesan melalui jalinan antara sains dan pengetahuan tempatan. Ini akan memastikan pembangunan yang berdaya tahan kepada perubahan iklim dan pada masa sama memenuhi aspirasi negara untuk mencapai pembangunan secara lestari.

participation, based on indigenous and scientific knowledge. This will ensure climate-resilient development that fulfils national aspirations for sustainability.



.....
(Dato Sri Douglas Uggah Embas)

Menteri Sumber Asli dan Alam Sekitar Malaysia
Minister of Natural Resources and Environment Malaysia

KENYATAAN DASAR

Memastikan pembangunan yang berdaya tahan terhadap perubahan iklim bagi memenuhi aspirasi negara dalam menerajui kelestarian

POLICY STATEMENT

Ensure climate-resilient development to fulfil national aspirations for sustainability

MUKADIMAH

Perubahan iklim adalah salah satu daripada isu utama di dunia masa kini. Pelbagai aktiviti manusia dan proses semulajadi menyumbang kepada berlakunya perubahan iklim. Adaptasi dan mitigasi merupakan dua pendekatan untuk menangani masalah perubahan iklim. Adaptasi merangkumi pelbagai tindakan yang membantu komuniti dan ekosistem untuk menghadapi perubahan iklim yang nyata dan dijangka berlaku. Mitigasi pula melibatkan pelbagai langkah untuk mengurangkan pelepasan gas rumah kaca yang merupakan salah satu punca pemanasan global serta memperkayakan pengumpulan karbon untuk mengurangkan impak perubahan iklim. Oleh demikian, dalam usaha menangani perubahan iklim, terutamanya impaknya terhadap manusia, kedua-dua adaptasi dan mitigasi perlu dilaksanakan secara bersepadu dan seimbang.

Tanggungjawab juga perlu dipikul bersama-sama bagi memastikan kelestarian generasi sekarang dan akan datang. Cara utama bagi mencapai pembangunan lestari di Malaysia adalah melalui penggunaan sumber asli secara lestari serta keseimbangan tindakan adaptasi dan mitigasi dalam mencapai pembangunan yang berdaya tahan terhadap perubahan iklim. Impak perubahan iklim boleh:

- menjejaskan kesejahteraan manusia dan alam sekitar;
- mengancam kelestarian sumber asli termasuk makanan, air dan tenaga; dan
- menggugat pembangunan termasuk keselamatan negara.

PREAMBLE

Climate change is one of the main issues facing the world today. Both human activities and natural processes contribute to climate change. Climate change is addressed through two approaches: adaptation and mitigation. Adaptation refers to actions taken to help communities and ecosystems cope with actual or expected impacts of climate change. Mitigation refers to actions taken to reduce greenhouse gas emissions, which is one of the main causes of global warming, and enhance carbon sinks to lessen the impacts of climate change. In addressing climate change, particularly its impacts on humans, both adaptation and mitigation should be implemented in an integrated and balanced manner.

Collective responsibility is also needed to adapt and mitigate climate change to ensure sustainability of the present and future generations. Malaysia recognises that promoting sustainable use of natural resources and balanced adaptation and mitigation responses are necessary to ensure climate-resilient and sustainable development. The impacts of climate change could:

- *affect human well-being and the environment;*
- *threaten the sustainability of natural resources including food, water and energy; and*
- *undermine development including national security.*



OBJEKTIF

Objektif Dasar Perubahan Iklim Negara adalah untuk:

- Mengarusperdanakan perubahan iklim melalui pengurusan sumber yang bijaksana dan pemuliharaan alam sekitar yang dipertingkatkan untuk memperkukuhkan daya saing ekonomi dan kualiti hidup;
- Mengintegrasikan respons bagi memperkuatkan daya tahan pembangunan terhadap perubahan iklim yang semasa dan yang dijangka ke dalam dasar nasional, pelan dan program negara; dan
- Mengukuhkan keupayaan institusi dan pelaksanaan untuk memanfaatkan peluang baru dalam mengurangkan impak negatif perubahan iklim.

OBJECTIVES

The objectives of the National Policy on Climate Change are:

- *Mainstreaming climate change through wise management of resources and enhanced environmental conservation resulting in strengthened economic competitiveness and improved quality of life;*
- *Integration of responses into national policies, plans and programmes to strengthen the resilience of development from arising and potential impacts of climate change; and*
- *Strengthening of institutional and implementation capacity to better harness opportunities to reduce negative impacts of climate change.*

RASIONAL

Perubahan iklim dan cuaca keterlaluan telah mengakitbatkan bencana alam, antaranya kenaikan paras laut, banjir, tanah runtuh, hakisan pantai dan tanah, kemarau, kebakaran hutan dan jerebu, di samping memberi kesan ke atas keselamatan dan kesihatan manusia, menggugat ekonomi negara, dan juga menyebabkan perubahan kepada alam semulajadi dan landskap binaan. Tambahan lagi, gangguan terhadap ekosistem akan mengancam jaminan sumber air dan makanan. Kebergantungan ke atas sumber-sumber tenaga konvensional telah menyumbang kepada pelepasan gas rumah kaca dan menjadikan negara lebih terdedah kepada pergolakan ekonomi di peringkat global. Daya saing ekonomi bergantung kepada pengeluaran dan penggunaan tenaga yang cekap.

Tindakan-tindakan strategik adalah diperlukan untuk mengukuhkan daya tahan negara terhadap impak perubahan iklim. Ini termasuk:

- mengarusperdanakan perubahan iklim;
- mengintegrasikan respons adaptasi dan mitigasi secara seimbang; dan
- meningkatkan keupayaan institusi dan pelaksanaan melalui penyelarasan tindakan-tindakan dasar yang bersepadu.

Keutamaan hendaklah diberi kepada keupayaan untuk menyesuaikan negara terhadap impak perubahan iklim sebenar dan yang dijangka. Langkah mitigasi harus diterajui bagi mempertingkatkan pencapaian adaptasi dan pembangunan lestari. Impak perubahan iklim merentasi semua peringkat, sektor, pihak dan kumpulan berkepentingan dan menuntut langkah-langkah yang menyeluruh dan bersepadu. Keupayaan institusi dalam pelaksanaan boleh dipertingkatkan secara berkesan dengan penyertaan secara berkerjasama berasaskan ilmu sains dan pengetahuan tempatan.

Dasar Perubahan Iklim Negara ini membantu untuk memastikan pembangunan yang berdaya tahan terhadap perubahan iklim bagi memenuhi aspirasi negara untuk mencapai pembangunan lestari. Dasar ini terdiri daripada lima prinsip, yang diperkukuhkan lagi dengan sepuluh teras strategik, bagi menentukan hala tuju negara dalam menangani cabaran perubahan iklim.

RATIONALE

Climate change and extreme weather have intensified the occurrence of natural disasters, amongst others sea-level rise, floods, landslides, coastal and land erosion, drought, forest fires and haze, which have impacted human safety and health, threatened the fabric of the nation's economy and caused changes to natural and built landscapes. In addition, disruption of ecosystems undermines water and food security. Continued dependence on conventional energy sources has contributed to greenhouse gas emissions and made the country even more vulnerable to climate change and global economic fluctuations. Economic competitiveness requires efficient energy production and consumption.

Strategic responses are necessary to strengthen the nation's resilience to the impacts of climate change. These include:

- *mainstreaming climate change;*
- *integration of balanced adaptation and mitigation responses; and*
- *enhancement of institutional and implementation capacity through coherent coordination of policy responses.*

The capacity of the nation to adapt to actual or expected impacts of climate change must be given priority. Mitigation responses should also enhance adaptation and sustainable development. Climate change impacts transcend all levels, sectors, stakeholders and major groups, necessitating concerted and holistic responses. Institutional capacity for implementation can only be made effective through collaborative participation, based on indigenous and scientific knowledge.

The National Policy on Climate Change helps to ensure climate-resilient development to fulfil national aspirations for sustainable development. Five principles underpin the ten strategic thrusts to set the national direction in responding to the challenges of climate change.

PRINSIP

Menyedari hakikat kesan dan impak negatif perubahan iklim, Malaysia mengambil tindakan untuk mengarusperdanakan respons nasional bagi memantapkan matlamat pembangunan ekonomi, sosial dan alam sekitar berdasarkan prinsip-prinsip berikut:

P1: Pembangunan Secara Lestari

Mengintegrasikan respons perubahan iklim ke dalam pelan rancangan negara bagi memenuhi aspirasi ke arah mencapai pembangunan lestari.

P2: Pemuliharaan Alam Sekitar dan Sumber Asli

Memperkuhkan pelaksanaan pelbagai tindakan perubahan iklim yang menyumbang kepada pemuliharaan alam sekitar dan penggunaan sumber asli secara lestari.

P3: Pelaksanaan Secara Bersepadu

Mengambil kira isu perubahan iklim ke dalam pelaksanaan program pembangunan di semua peringkat.

P4: Penglibatan Yang Berkesan

Meningkatkan penglibatan semua pihak berkepentingan dan kumpulan utama bagi pelaksanaan tindakan-tindakan mengenai perubahan iklim secara berkesan.

P5: Tanggungjawab Sama Beban Berbeza dan Keupayaan Tersendiri

Penglibatan negara dalam isu perubahan iklim di peringkat antarabangsa adalah berdasarkan kepada prinsip tanggungjawab sama beban berbeza dan keupayaan tersendiri.

PRINCIPLES

Malaysia recognises the adverse effects and impacts of climate change and undertakes to mainstream national responses that consolidate economic, social and environmental development goals based on the following principles:

P1: Development on a Sustainable Path

Integrate climate change responses into national development plans to fulfil the country's aspiration for sustainable development.

P2: Conservation of Environment and Natural Resources

Strengthen implementation of climate change actions that contribute to environmental conservation and sustainable use of natural resources.

P3: Coordinated Implementation

Incorporate climate change considerations into implementation of development programmes at all levels.

P4: Effective Participation

Improve participation of stakeholders and major groups for effective implementation of climate change responses.

P5: Common but Differentiated Responsibilities and Respective Capabilities

International involvement on climate change will be based on the principle of common but differentiated responsibilities and respective capabilities.

TERAS STRATEGIK

Dasar Perubahan Iklim Negara akan dijadikan panduan dalam mengintegrasikan isu perubahan iklim dalam perancangan dan pelaksanaan program pembangunan dan proses membuat keputusan; menggalakkan pertumbuhan ekonomi secara lestari dan pembangunan insan; serta pemuliharaan alam sekitar. Dasar ini melengkapi dasar yang sedia ada dan mengambil kira prinsip-prinsip konvensyen antarabangsa di peringkat global. Tindakan kerajaan mengenai perubahan iklim dalam semua sektor adalah berdasarkan kepada teras strategik seperti berikut:

ST1-P1: Menyelaras pengharmonian dasar-dasar yang sedia ada melalui pendekatan adaptasi dan mitigasi perubahan iklim secara seimbang.

ST2-P1: Merangka pembangunan yang berdaya tahan perubahan iklim melalui ekonomi rendah karbon bagi meningkatkan daya saing global dan mencapai pertumbuhan sosioekonomi yang lestari.

ST3-P1: Menyokong pembangunan dan pelaburan termasuk pembangunan industri yang berdaya tahan perubahan iklim dalam mencapai pertumbuhan sosioekonomi yang lestari.

ST4-P2: Menerap langkah-langkah adaptasi dan mitigasi secara seimbang untuk mengukuhkan pemuliharaan alam sekitar dan menggalakkan kelestarian sumber asli.

ST5-P2: Memantapkan dasar tenaga dengan mengambil kira amalan pengurusan yang meningkatkan tenaga diperbaharui (RE) dan kecekapan tenaga (EE).

ST6-P3: Menginstitusikan langkah-langkah untuk mengintegrasikan isu rentas sektor ke dalam dasar, rancangan, program dan projek bagi meningkatkan daya tahan terhadap perubahan iklim.

STRATEGIC THRUSTS

The National Policy on Climate Change will facilitate the integration of climate change considerations into planning and implementation of development programmes and decision-making processes; to foster sustainable economic and human development; as well as environmental conservation. It complements existing policies and takes cognisance of international conventions on global concerns. National responses on climate change in all sectors will be directed towards the following strategic thrusts.

ST1-P1: *Facilitate the harmonisation of existing policies to address climate change adaptation and mitigation in a balanced manner.*

ST2-P1: *Institute measures to make development climate-resilient through low carbon economy to enhance global competitiveness and attain environmentally sustainable socio-economic growth.*

ST3-P1: *Support climate-resilient development and investment including industrial development in pursuit of sustainable socio-economic growth.*

ST4-P2: *Adopt balanced adaptation and mitigation measures to strengthen environmental conservation and promote sustainability of natural resources.*

ST5-P2: *Consolidate the energy policy incorporating management practices that enhances renewable energy (RE) and energy efficiency (EE).*

ST6-P3: *Institutionalise measures to integrate cross-cutting issues in policies, plans, programmes and projects in order to increase resilience to climate change.*

ST7-P3: Menyokong proses membuat keputusan berasaskan pengetahuan melalui penyelidikan dan pembangunan mengenai iklim secara intensif dan pembinaan keupayaan sumber manusia.

ST8-P4: Meningkatkan kerjasama melalui komunikasi dan penyelarasan yang cekap di kalangan pihak berkepentingan untuk melaksanakan respons perubahan iklim yang berkesan.

ST9-P4: Meningkatkan kesedaran dan penglibatan orang awam untuk menggalakkan respons perubahan iklim.

ST10-P5: Mengukuhkan penglibatan dalam program perubahan iklim di peringkat antarabangsa berdasarkan prinsip tanggungjawab sama beban berbeza dan keupayaan tersendiri.

ST7-P3: *Support knowledge-based decision making through intensive climate related research and development and capacity building of human resources.*

ST8-P4: *Improve collaboration through efficient communication and coordination among all stakeholders for effective implementation of climate change responses.*

ST9-P4: *Increase awareness and community participation to promote behavioural responses to climate change.*

ST10-P5: *Strengthen involvement in international programmes on climate change based on the principle of common but differentiated responsibilities and respective capabilities.*

TINDAKAN UTAMA

KA1 - ST1

Menjalankan semakan secara sistematik dan mengharmonikan perundangan, dasar dan perancangan yang sedia ada, dengan mengambil kira dan mencadangkan langkah-langkah adaptasi dan mitigasi secara seimbang untuk sektor yang berikut:

- Pertanian dan jaminan makanan;
- Sumber asli dan alam sekitar (air, biodiversiti, hutan, mineral, tanah, pantai dan marin serta udara);
- Jaminan tenaga;
- Perindustrian;
- Kesihatan awam;
- Pelancongan;
- Pengangkutan;
- Infrastruktur;
- Gunatanah dan perubahan gunatanah (termasuk tebus gunatanah);
- Penempatan manusia dan kehidupan;
- Pengurusan sisa; dan
- Pengurangan risiko bencana.

KA2 - ST1

Mengambil kira perubahan iklim sebagai keutamaan dalam Majlis Perancangan Pembangunan Nasional.

KA3 - ST1

Menubuhkan satu jawatankuasa antara kementerian yang merentas sektor bagi mengambil tindakan terhadap perubahan iklim.

KEY ACTIONS

KA1 - ST1

Conduct systematic reviews and harmonise existing legislation, policies and plans, taking into account and proposing relevant balanced adaptation and mitigation measures, to address the following:

- *Agriculture and food security;*
- *Natural resources and environment (water, biodiversity, forestry, minerals, soil, coastal and marine and air);*
- *Energy security;*
- *Industries;*
- *Public health;*
- *Tourism;*
- *Transportation;*
- *Infrastructure;*
- *Land use and land use change (include land reclamation);*
- *Human settlements and livelihood;*
- *Waste management; and*
- *Disaster risk reduction.*

KA2 - ST1

Incorporate climate change as a priority area in the National Development Planning Council.

KA3 - ST1

Establish an inter-ministerial and cross-sectoral committee to enable the implementation of climate change measures.

TINDAKAN UTAMA

KA4 - ST2

Mengenalpasti dan membuat syor ke arah ekonomi rendah karbon untuk sektor yang berikut:

- Jaminan tenaga;
- Perindustrian;
- Pengangkutan;
- Infrstruktur awam;
- Pengurusan sisa;
- Penempatan manusia;
- Perhutanan; dan
- Pertanian.

KA5 - ST2

Mengambil kira dan menyelaraskan pelaksanaan langkah-langkah dan teknologi mesra iklim dengan mengukuhkan perkara berikut:

- Perundangan, peraturan dan Penguatkuasaan;
- Pembangunan sumber manusia;
- Kewangan dan insentif;
- Penyelidikan dan pembangunan;
- Pemindahan teknologi; dan
- Penglibatan semua pihak berkepentingan yang berkenaan.

KA6 - ST2

Menggalakkan ekonomi rendah karbon dengan memperuntukkan kewangan yang mencukupi dan teknologi yang bersesuaian melalui saluran berikut :

- Mekanisme pasaran;
- Kewangan dan insentif fiskal dan disinsentif;
- Perkongsian bijak sektor awam dan swasta; dan
- Penglibatan sektor kewangan dan insurans.

KA7 - ST2

Menyepadukan langkah-langkah adaptasi dan mitigasi yang seimbang ke dalam rancangan pembangunan.

KEY ACTIONS

KA4 - ST2

Identify and recommend options towards low carbon economy for the following sectors:

- *Energy security;*
- *Industries;*
- *Transportation;*
- *Public infrastructure;*
- *Waste management;*
- *Human settlements;*
- *Forestry; and*
- *Agriculture.*

KA5 - ST2

Incorporate and facilitate implementation of climate-friendly measures and technologies by strengthening the following:

- *Laws and regulations and Enforcement;*
- *Human resource development;*
- *Finance and incentives;*
- *Research and development;*
- *Transfer of technology; and*
- *Outreach to relevant stakeholders.*

KA6 - ST2

Allocate adequate financing and appropriate technological measures for promoting low carbon economy through the following:

- *Market mechanisms;*
- *Financial and fiscal incentives and disincentives;*
- *Mobilising public-private partnerships; and*
- *Involvement of financial and insurance sectors.*

KA7 - ST2

Integrate balanced adaptation and mitigation measures into development plans.

KA8 - ST2

Establish criteria and indices for environmentally sustainable socio-economic growth.

TINDAKAN UTAMA

KA8 - ST2

Mewujudkan kriteria dan indeks untuk pertumbuhan sosioekonomi yang lestari.

KA9 - ST3

Menguatkan mekanisme penilaian pelaburan bagi memastikan industri berdaya tahan perubahan iklim ke arah mencapai pembangunan lestari.

KA10 - ST3

Menggubal rangka pelaporan pelepasan gas rumah kaca daripada sektor industri dan dihubungkan kepada Jabatan Perangkaan Malaysia bagi memastikan pelaporan berkualiti dan lestari.

KA11 - ST3

Mendorong respons perniagaan dan perindustrian dengan menginstutuskan mekanisme yang merangkumi cara-cara berikut:

- Insentif kewangan;
- Melatih pakar;
- Pengurusan teknologi;
- Pencapaian program komunikasi; dan
- Anugerah pengiktirafan.

KEY ACTIONS

KA9 - ST3

Strengthen investment evaluation mechanisms to capitalise and ensure a climate-resilient industry in achieving sustainable development.

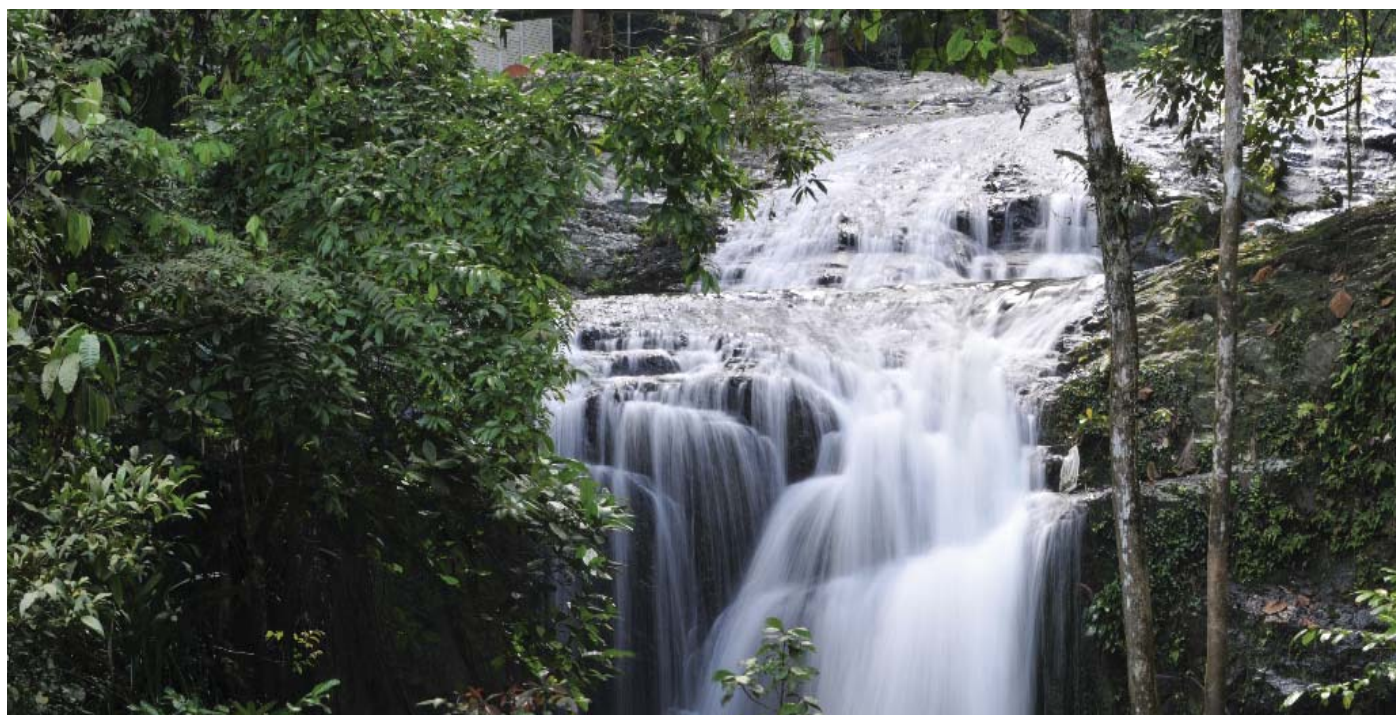
KA10 - ST3

Establish a greenhouse gas (GHG) emissions reporting framework for industries with linkage to the Statistics Department to ensure a sustainable and quality assured reporting process.

KA11 - ST3

Institutionalise a mechanism, which includes the following means, to facilitate business and industrial responses:

- *Financial incentives;*
- *Training of experts;*
- *Technology management;*
- *Outreach communication programmes; and*
- *Recognition awards.*



TINDAKAN UTAMA

KA12 - ST4

Mengimbangkan penerapan langkah-langkah adaptasi dan mitigasi ke dalam dasardandan perancangan alam sekitar dan sumber asli.

KA13 - ST4

Mengambil pelbagai langkah termasuk menyediakan bantuan kewangan dan teknikal untuk perkara berikut:

- Pertanian dan jaminan makanan;
- Sumber asli dan alam sekitar (air, biodiversiti, hutan, mineral, tanah, pantai dan marin serta udara);
- Jaminan tenaga;
- Perindustrian;
- Kesihatan awam;
- Pelancongan;
- Pengangkutan;
- Infrastruktur;
- Gunatanah dan perubahan gunatanah (termasuk tebus gunatanah);
- Penempatan manusia dan kehidupan;
- Pengurusan sisa; dan
- Pengurangan risiko bencana.

KA14 - ST4

Merangka dan melaksanakan rancangan perubahan iklim melalui kerjasama sektor awam-swasta, NGO, dan komuniti.

KEY ACTIONS

KA12 - ST4

Integrate balanced adaptation and mitigation measures into policies and plans on environment and natural resources.

KA13 - ST4

Incorporate measures, including mobilising financing and technical assistance, into the following areas:

- *Agriculture and food security;*
- *Natural resources and environment (water, biodiversity, forestry, minerals, soil, coastal and marine and air);*
- *Energy security;*
- *Industries;*
- *Public health;*
- *Tourism;*
- *Transportation;*
- *Infrastructure;*
- *Land use and land use change (include land reclamation);*
- *Human settlements and livelihood;*
- *Waste management; and*
- *Disaster risk reduction.*

KA14 - ST4

Develop and implement plans for public-private, NGOs and communities collaboration on climate change.



TINDAKAN UTAMA

KA15 - ST4

Memulihara dan meningkatkan pengumpulan karbon dalam ekosistem asli termasuk ladang dan menggalakkan pemuliharaan ekosistem yang sensitif dan terjejas melalui amalan-amalan pengurusan dan perancangan gunatanah yang baik.

KA16 - ST4

Mengenalpasti sifat dan nilai ekosistem untuk diterapkan ke dalam proses perancangan pembangunan.

KA17 - ST4

Membangunkan sistem pengiraan karbon dan kajian dasar bagi ekosistem hutan.

KA18 - ST4

Membangunkan pelbagai model unjuran iklim dan hidroiklim untuk mengenalpasti kemudahterancam dan impak perubahan iklim yang berpotensi.

KEY ACTIONS

KA15 - ST4

Conserve and enrich carbon pools in natural ecosystems including plantations and promote rehabilitation of sensitive and degraded ecosystems through sound management practices and land use planning.

KA16 - ST4

Identify and recognise the attribute and value of ecosystem services and integrate into the development planning process.

KA17 - ST4

Develop national carbon accounting systems and baseline studies of forest ecosystems.

KA18 - ST4

Develop multiple national climate and hydroclimate projection models for identifying vulnerabilities and assessing potential impacts of climate change.



TINDAKAN UTAMA**KA19 - ST5**

Menggalakkan RE dan EE dalam penjanaan kuasa melalui:

- Perkongsian beban antara kerajaan dan pihak pembekal tenaga;
- Menetapkan sasaran / piawai bagi EE dan RE;
- Memasukkan RE ke dalam campuran penjanaan oleh pembekal tenaga;
- Menggalakkan penjanaan RE oleh pihak penjana persendirian berskala kecil termasuk komuniti tempatan.

KA20 - ST5

Menggalakkan penggunaan RE dan EE untuk mengurangkan pelepasan GHG di sektor pengangkutan dengan:

- Menguatkuasakan penggunaan enjin kenderaan baru dengan kecekapan bahan api yang tinggi;
- Meningkatkan penggunaan enjin hibrid dan kenderaan elektrik;
- Membangunkan satu sistem pengangkutan awam yang murah, berkesan, cekap, dan bersepadu;
- Pembangunan hartanah dan perbandaran yang membolehkan pergerakan seperti basikal, berjalan kaki dan penggunaan pengangkutan awam;
- Menggalakkan pengangkutan air; dan
- R&D ke atas kecekapan bahan api yang tinggi dan bahan api alternatif.

KA21 - ST5

Menggalak dan meningkatkan EE dalam sektor perindustrian dengan:

- Mengkaji semula dan mewujudkan mekanisme perundangan untuk penggunaan EE di sektor perindustrian;
- Menyedia dan menggalakkan bantuan teknikal dan kewangan atau memberi insentif-insentif kepada industri yang menggunakan teknologi dan proses EE;
- Menjalankan penilaian keperluan teknologi;
- Menjalankan audit tenaga di sektor

KEY ACTIONS**KA19 - ST5**

Promote RE and EE for power generation through:

- *Burden sharing between government and power producers;*
- *Establishment of EE and RE targets/standards;*
- *Inclusion of RE in generation mix by power producers; and*
- *Promotion of RE generation by small and independent developers including local communities.*

KA20 - ST5

Promote RE and EE to reduce GHG emissions in the transportation sector through:

- *Enforcement of new vehicles engines with higher fuel efficiency;*
- *Increase usage of hybrid engines and electric vehicles;*
- *Development of an effective, efficient, integrated affordable public transportation system;*
- *Property and township development that allows movement by cycling, walking and public transport;*
- *Promotion of water transportation; and*
- *R&D on higher fuel efficiency and alternative fuel.*

KA21 - ST5

Promote and increase EE in industrial sectors through:

- *Review and establishment of legal mechanism for EE application in industries;*
- *Provision and promotion of technical and financial assistance or incentives to the industry using EE technology and processes;*
- *Conduct of technology needs assessment;*
- *Conduct of energy audit in industrial and building sectors; and*
- *Adoption of EE practices by new industries.*

TINDAKAN UTAMA

- perindustrian dan bangunan; dan
- Mewajibkan industri baru menggunakan amalan EE.

KA22 - ST5

Menggalak pembinaan bangunan mesra alam di sektor perdagangan / institut, industri dan perumahan melalui:

- Penerapan konsep tenaga rendah atau sifar dalam reka bentuk dan pembinaan bangunan baru;
- Penambahbaikan sistem pengudaraan dan pendinginan serta lampu yang cekap;
- Pengamalan penjimatan tenaga dalam bangunan;
- Penambahbaikan bangunan sedia ada untuk menggunakan aplikasi EE dan menjana RE; dan
- Pembangunan indeks bangunan mesra alam.

KA23 - ST5

Membenarkan komuniti tempatan menjalankan penyelenggaraan asas bagi RE, terutamanya dalam pembekalan elektrik ke luar bandar termasuk skim mini dan mikro hidroelektrik.

KEY ACTIONS

KA22 - ST5

Promote construction of green buildings in commercial / institutional, industrial and residential sector through:

- *Application of low or zero energy concept in the design and construction of new buildings;*
- *Retrofitting of efficient ventilation and cooling systems as well as lighting systems;*
- *Energy conservation practice in buildings;*
- *Retrofitting existing buildings to include EE features and generate RE; and*
- *Development of a green building index.*

KA23 - ST5

Empower local communities in basic RE maintenance, especially in rural electrification including mini and micro hydroelectric schemes.



TINDAKAN UTAMA

KA24 - ST6

Menyemak semula pelbagai usaha yang diambil oleh pihak berkepentingan termasuk yang sedia dilaksanakan, dan menjalankan kajian ekonomi untuk penerapan ke dalam Rancangan Malaysia.

KA25 - ST6

Mengambil langkah-langkah ke dalam dasar, rancangan, program dan projek di sektor berikut:

- Pertanian dan jaminan makanan;
- Sumber asli dan alam sekitar (air, biodiversiti, hutan, mineral, tanah, pantai dan marin serta udara);
- Jaminan tenaga;
- Perindustrian;
- Kesihatan awam;
- Pelancongan;
- Pengangkutan;
- Infrastruktur;
- Gunatanah dan perubahan gunatanah (termasuk tebus gunatanah);
- Penempatan manusia dan kehidupan;
- Pengurusan sisa; dan
- Pengurangan risiko bencana.

KA26 - ST6

Mengambil kira kesan perubahan iklim di peringkat perancangan melalui kaedah berikut:

- Pengurusan Kawasan Sensitif Alam Sekitar secara bersepadu;
- Penilaian Strategik Alam Sekitar;
- Penilaian Ekonomi ke atas Perkhidmatan Ekologi;
- Petunjuk Pembangunan Lestari.

KA27 - ST 6

Memperkukuhkan mekanisme penyelarasan untuk menyelia perancangan, pelaksanaan dan pemantauan pelbagai langkah perubahan iklim.

KEY ACTIONS

KA24- ST6

Stocktaking of current measures, taking into account initiatives already implemented by stakeholders, and undertake economic evaluation for incorporation into future Malaysia Plans.

KA25 - ST6

Integrate measures into policies, plans, programmes and projects in the following areas:

- *Agriculture and food security;*
- *Natural resources and environment (water, biodiversity, forestry, minerals, soil, coastal and marine and air);*
- *Energy security;*
- *Industries;*
- *Public health;*
- *Tourism;*
- *Transportation;*
- *Infrastructure;*
- *Land use and land use change (include land reclamation);*
- *Human settlements and livelihood;*
- *Waste management; and*
- *Disaster risk reduction.*

KA26 - ST6

Integrate climate change considerations at the planning level by applying tools that includes the following:

- *Integrated Environmentally Sensitive Areas;*
- *Strategic Environmental Assessment;*
- *Economic Evaluation of Ecological Services;*
- *Sustainable Development Indicators.*

KA27 - ST6

Enhance the coordinating mechanism to oversee the planning, implementation and monitoring of climate change measures.

TINDAKAN UTAMA

KA28 - ST7

Mewujudkan dan melaksanakan satu agenda R&D perubahan iklim kebangsaan dengan mengambilkira sektor berikut:

- Pertanian dan jaminan makanan;
- Jaminan air dan perkhidmatannya;
- Perhutanan dan khidmat ekosistem;
- Kelestarian bio-tenaga;
- Perkhidmatan kesihatan awam dan penyampaianya;
- Menggunakan model tempatan untuk unjuran senario masa depan;
- Mekanisme sosioekonomi dan pelaburan yang inovatif;
- Pendedahan terhadap kejadian cuaca keterlaluan dan bencana alam; dan
- Analisis dasar untuk mengharmonikan isu-isu negara dan antarabangsa.

KA29 - ST7

Menguatkan bank data kebangsaan menerusi inventori kebangsaan secara berkala dengan:

- Mengkaji semula dan memperluaskan peranan Jabatan Perangkaan Malaysia sebagai penyimpan maklumat alam sekitar, termasuk GHG;
- Merumuskan langkah-langkah untuk pelaporan dan pengumpulan data oleh Jabatan Perangkaan Malaysia, agensi-agensi utama dan pihak berkepentingan; dan
- Menubuhkan pangkalan data inventori berkenaan bencana alam dan kejadian cuaca keterlaluan.

KA30 - ST7

Menginstitutionaliskan program pemindahan teknologi mesra iklim secara berperingkat bagi memupuk kelestarian R&D di firma dan institusi tempatan seperti berikut:

- Peringkat Permulaan – Penilaian keperluan teknologi, mewujudkan persekitaran yang membolehkan pengimportan teknologi;
- Peringkat Dalaman – Membangunkan keupayaan individu dan institusi,

KEY ACTIONS

KA28 - ST7

Establish and implement a national R&D agenda on climate change taking into account the following areas:

- *Agriculture and food security;*
- *Water security and services;*
- *Forestry and ecosystem services;*
- *Sustainable bio-energies;*
- *Public health services and delivery;*
- *Localised modelling for projection of future scenarios;*
- *Innovative socio-economic and financing mechanisms;*
- *Vulnerability due to extreme weather events and natural disasters; and*
- *Policy analysis harmonising national and international issues.*

KA29 - ST7

Strengthen national data repository through periodic national inventory by:

- *Reviewing and expanding the role of the Department of Statistics as the central depository for environmental information, including GHG;*
- *Formulating measures for responsible reporting and collation of data by the Department of Statistic, key agencies and other stakeholders; and*
- *Establishing database inventory on natural disasters and extreme weather events.*

KA30 - ST7

Institutionalise the following stage-based climate-friendly technology transfer programme to nurture self-innovativeness and R&D sustainability in local firms and institutions

- *Initiation Stage – Assessment of technology needs, create enabling environment, importing of technologies;*
- *Internalisation Stage – Develop human and institutional capacities, enhance knowledge and awareness of emerging technologies,*

TINDAKAN UTAMA

meningkatkan pengetahuan; dan kesedaran terhadap kemunculan teknologi baru; menerap dan menyesuaikan teknologi oleh firma tempatan di bawah regim IPR yang fleksibel; dan

- Peringkat Penghasilan – Mendapatkan modal yang mencukupi bagi memperoleh teknologi yang lebih baik, membuat pembaharuan dan membina keupayaan melalui program R&D.

KA31 - ST7

Menggalakkan program kerjasama yang pragmatik melalui:

- Mekanisme dan peralatan yang berkesan untuk kerjasama teknologi dalam sektor-sektor tertentu;
- Kerjasama R&D untuk memperoleh pengetahuan dan teknologi;
- Menyokongan pembangunan dan penyebaran teknologi tempatan; dan
- Kerjasama serantau berkaitan pembangunan teknologi.

KA32 - ST7

Mengenalpasti mekanisme penyelarasan untuk mengawasi aktiviti-aktiviti R&D, penyebaran maklumat, mengelakkan pertindihan dan menyokong dalam pembuatan keputusan.

KA33 - ST7

Menginstitusikan pelbagai langkah untuk memperkukuhkan dan menghubungkan sains dan dasar iklim.

KEY ACTIONS

adopting and adapting technologies by local firms under flexible IPR regime; and

- *Generation Stage – Source adequate capital to acquire better technologies, innovating and capacity building through R&D programme.*

KA31 - ST7

Promote pragmatic cooperation programmes through:

- *Effective mechanisms and tools for technology cooperation in specific sectors;*
- *Collaborative R&D to access knowledge and technologies;*
- *Support for endogenous development and diffusion of technology; and*
- *Regional cooperation on technology development.*

KA32 - ST7

Identify a coordinating mechanism to oversee R&D activities, information dissemination, avoidance of duplication, and to support decision making.

KA33 - ST7

Institutionalise measures to strengthen effective linking of climate science and policy.



TINDAKAN UTAMA

KA34 - ST8

Menubuhkan mekanisme komunikasi dan perundingan yang cekap dan berkesan di kalangan semua pihak berkepentingan.

KA35 - ST8

Mengukuhkan perundangan untuk membuat perancangan dan keputusan secara bersama.

KA36 - ST8

Menggalakkan respons dan program perubahan iklim yang berteraskan penyertaan masyarakat tempatan.

KA37 - ST8

Mengukuhkan jaringan kerjasama dan keupayaan agensi di peringkat kerajaan persekutuan, negeri dan tempatan.

KEY ACTIONS

KA34 - ST8

Establish and institutionalise effective and efficient communication and consultation mechanisms among all stakeholders.

KA35 - ST8

Strengthen legislative provisions for participatory planning and decision making.

KA36 - ST8

Promote community-based climate change responses and programmes.

KA37 - ST8

Strengthen collaborative networks and capacity of agencies at the federal, state and local government levels.



TINDAKAN UTAMA

KA38 - ST9

Menerapkan pembelajaran sistematik secara formal dan tidak formal serta meningkatkan kesedaran mengenai perubahan iklim melalui pendekatan-pendekatan yang berikut:

- Penglibatan pelbagai pihak termasuk, organisasi bukan kerajaan (NGO), organisasi masyarakat tempatan (CBO), dan juga media;
- Meningkatkan kerjasama antara kerajaan dengan sektor swasta termasuk tanggungjawab korporat; dan
- Mensasarkan kumpulan khas.

KA39 - ST9

Menggalakkan cara hidup lestari dan mengenalpasti insentif yang boleh menggalakkan mereka.

KEY ACTIONS

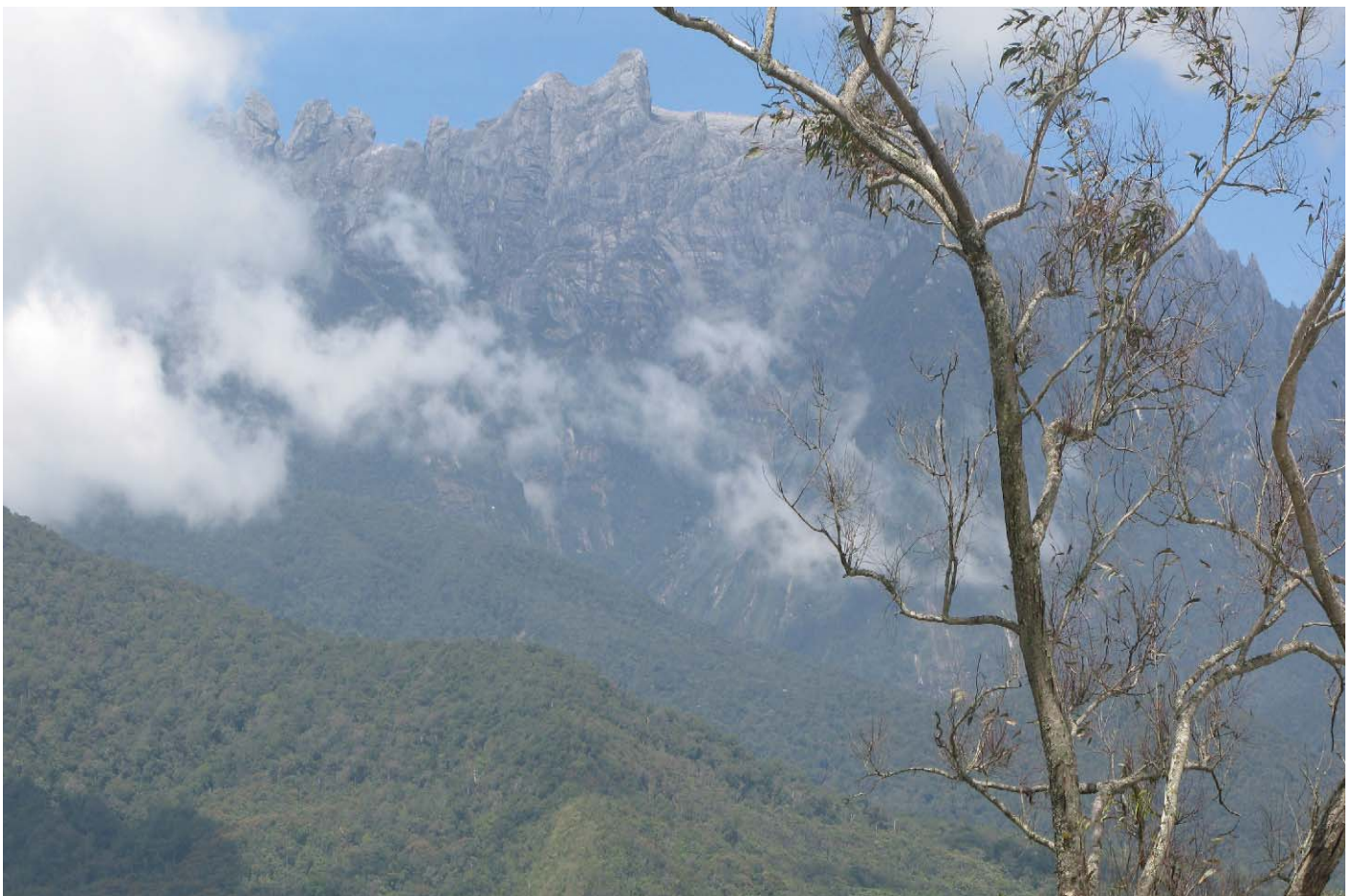
KA38 - ST9

Adopt systematic and targeted formal and informal education and awareness raising on climate change through the following approaches:

- *Involvement of various stakeholders including non-government organisations (NGOs), community based organisations (CBOs) and the media;*
- *Enhance cooperation between government and private sectors including corporate responsibility; and*
- *Targeting special groups.*

KA39 - ST9

Promote sustainable lifestyles and explore incentives that encourage them.



TINDAKAN UTAMA

KA40 - ST10

Mewujudkan daftar dan memperluaskan golongan pakar perubahan iklim.

KA41 - ST10

Menginstitutionalkan mekanisme untuk menyelaraskan pendirian negara dalam perundingan antarabangsa yang melibatkan pihak-pihak berkepentingan yang berkaitan.

KA42 - ST10

Merangka program pembinaan keupayaan berterusan bagi menyokong rundingan dan pelaksanaan kewajiban antarabangsa secara berterusan.

KA43 - ST10

Menggalakkan kerjasama serantau mengenai perubahan iklim melalui mekanisme yang sedia ada di antara kerajaan dan badan bukan kerajaan.

KEY ACTIONS

KA40 - ST10

Establish a register and expand the pool of climate change experts.

KA41 - ST10

Institutionalise a mechanism for coordinating consultation among stakeholders on national positions and responses to address current and emerging issues for international negotiations.

KA42 - ST10

Institute continuous capacity building programmes to support negotiation and implementation of international obligations.

KA43 -- ST10

Promote regional cooperation on climate change within existing inter-governmental and non-governmental mechanisms.



DAFTAR KATA / GLOSSARY

Adaptation

Actions taken to help communities and ecosystems cope with actual or expected impacts of climate change.

Balancing Adaptation and Mitigation

Holistic and integrated approach to simultaneously optimise the benefits of both adaptation and mitigation.

Climate Change

Any change in climate over time that directly and indirectly affects human and their activities as well as natural systems and processes.

Climate-Friendly Technology

Refer "Low-Carbon Technology".

Climate-Proof Development

Actions taken to protect development from any disruption due to actual or expected impacts of climate change.

Climate-Resilient Development

Development that takes into account measures to address climate change and extreme weather in line with national priorities.

Economic Competitiveness

Refer "Global Competitiveness".

Energy Efficiency

The use of less energy to provide the same level of energy service primarily by means of a more efficient technology or process.

Extreme Weather

Any rare and/or unexpected destructive weather phenomena that is at the extreme of historical distribution.

Global Competitiveness

The degree to which a nation can produce goods and services that meet the requirements of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long-term.

Greenhouse Gas

The atmospheric gases responsible for causing global warming and climate change. Examples include carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), among others.

Human Well-being

The satisfactory state that an individual or a group of individuals should be in, that involve aspects such as happiness, health, safety, security and prosperity as well as participation in society.

DAFTAR KATA / GLOSSARY

Low-Carbon Economy

An economy that has minimal output of greenhouse gas emissions into the atmosphere.

Low-Carbon Technology

Technology that over its life cycle causes less greenhouse gas emissions than other technological options.

Major Groups

Major groups include farmers, women, the scientific and technological community, children and youth, indigenous peoples and their communities, workers and trade unions, business and industry, non-governmental organisation and local authorities.

Mitigation

Actions taken to enhance sinks and reduce greenhouse gas emissions to lessen the impacts of climate change.

Renewable Energy

Energy derived from natural processes that are constantly replenished. Examples are solar, wind, biomass, geothermal and hydropower, among others.

Sinks

Any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere. Forests and other vegetation are considered sinks because they remove carbon dioxide through photosynthesis.

Stakeholders

Any individual, group, body or entity, directly or indirectly affected by, or interested in, or with a stake in climate change matters such as government, public bodies, private sector, non-government organisations (NGOs), community based organisations (CBOs), civil society, consumer associations and major groups.

Vulnerability

The degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change.

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