LAMPIRAN A

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LAMPIRAN B

PRINSIP-PRINSIP ETIKA ALAM SEKITAR G. TYLER MILLER

Principles of Environmental Ethics

1. The earth does not belong to us; we belong to the earth (*principle of humanity*).

2. Our role is to understand and work with the rest of nature, not to conquer it (*principle of cooperation*).

3. Every living species has a right to live, or at least to struggle to live, simply because it exists; this right is not dependent on its actual or potential use to us (*respect-for-nature principle*).

4. The best things in life aren't things (*principle of love, caring and enjoy*).

5. Something is right when it tends to maintain the ecological integrity, sustainability, and diversity of Earth's life support systems (us and other species and wrong when it tends otherwise; the bottom line is that Earth is the bottom line *(principle of sustainability and ecocentricism*) .

6. It is wrong for humans to cause the premature extinction of any wild species and the elimination and degradation of their habitats (*preservation-of-wildlife-and-biodiversity principle)*

7. When we alter nature to meet what we consider to be basic needs or non--basic wants, we should choose the method that does the least possible harm to other living things; in minimizing harm, it is in general worse to harm a species than an individual organism, and still worse to harm a community of living organisms (*principle of minimum wrong*).

8. When we alter nature, we should make such changes at nature's rates and in nature's ways (*principle of sustainable change).*

9. It is wrong to treat people and other living things primarily as factors of production, whose value is expressed only in economic terms *(economics-is-not-everything principle*).

10. We should leave the earth in as good a condition as we found it, if not better (*rights-of-the-unborn principle).*

11. All people should be held responsible for their own pollution and environmental degradation; dumping our wastes in another area or country is the equivalent of using chemical warfare on the people or other species receiving our wastes (*responsibility-of-the-born principle)*

12. Individual, corporation, or nation has a right to an ever-increasing share of the earth's finite resources; don't let need slide into greed (*principle of enoughness)*

13. We should protect Earth's remaining wild ecosystems from our activities, rehabilitate or restore ecosystems we have degraded, use ecosystems only on a sustainable basis, and allow many of the ecosystems we have occupied and abused to return to a wild state (*principle of ecosystem protection and healing).*

14. In protecting and sustaining nature, go further than the law requires (*ethics-often-exceeds-legality principle)*

15. To prevent excessive deaths of people and other species, people must prevent excessive births (*birth-control-is-better-than-death-control principle).*

16. Don't do anything that depletes Earth's physical, chemical, and biological capital, which supports all life and human economic activities; the Earth's deficit is the ultimate deficit *(balanced-Earth-budget principle*).

17. To love, cherish, and understand the earth and yourself, take time to experience and sense the air, water, soil, plants, animals, bacteria, and other parts of the earth directly (*direct-experience-is-the-best-teacher principle)*

18. Learn about love, care for your local environment, and live gently within that place; walk lightly on the earth (*love-your-neighbourhood principle).*

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LAMPIRAN C

PANDANGAN BEBERAPA PIHAK TENTANG PRINSIP-PRINSIP *SUSTAINABLE DEVELOPMENT*

Commonwealth Government 1990
Principles of Ecologically Sustainable Development

1. Integrating environmental and economic goals in policies and activities.
2. Ensuring that environmental assets are appropriately valued.
3. Providing for equity within and between generations.
4. Dealings cautiously with risk and irreversibility.
5. Recognising the global dimension.

Australian Mainstream Environment Groups
Principles of Sustainable Development

1. Inter-generational equity.
2. Conservation of biodiversity and ecological integrity
3. Coonstant natural capital and 'sustainable income'.
4. Anticipatory and precautionary policy approach.
5. Social equity.
6. Limits on natural resource use.
7. Qualitative development.
8. Pricing environmental values and natural resources.
9. Global Perspective.
10. Effiency.
11. Resilience.
12. External balance.

13. Community participation.

International Environmental Organisations
Principles of Sustainable Development

1. Respect and care for the community of life.
2. Improve the quality of human life.
3. Conserve the Earth's vitality and diversity.
4. Minimize the depletion of non-renewable resources.
5. Keep within the Earth's carrying capacity.
6. Change personel attitudes and practices.
7. Enable communities to care for their own environments.
8. Provide a national framework for integrating development and conservation.
9. Create a global alliance.

Sumber Perolehan:

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LAMPIRAN D

DEKLARASI PERSIDANGAN UNCED DI RIO DE JANEIRO 1992

Recognising the integral and interdependent nature of the Earth, our home, the nations meeting at the Earth Summit in Rio de Janeiro adopted a set of principles to guide future development. These principles define the rights of people to development, and their responsibilities to safeguard the common environment. They build on ideas from the Stockholm Declaration at the 1972 United Nations Conference on the Human Environment.

The Rio Declaration states that the only way to have long-term economic progress is to link it with environmental protection. This will only happen if nations establish a new and equitable global partnership involving governments, their people and key sectors of societies. They must build international agreements that protect the integrity of the global environment and the development system.

The Rio principles include the following ideas:

- People are entitled to a healthy and productive life in harmony with nature.
- Development today must not undermine the development and environment needs of present and future generations.
- Nations have the sovereign right to exploit their own resources, but without causing environmental damage beyond their borders.
- Nations shall develop international laws to provide compensation for damage that activities under their control cause to areas beyond their borders.
- Nations shall use the precautionary approach to protect the environment. Where there are threats of serious or irreversible damage, scientific uncertainty shall not be used to postpone cost-effective measures to prevent environmental degradation.
- In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process, and cannot be considered in isolation from it.
- Eradicating poverty and reducing disparities in living standards in different parts of the world are essential to achieve sustainable development and meet the needs of the majority of people.
- Nations shall cooperate to conserve, protect and restore the health and integrity of the Earth's ecosystem. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.
- Nations should reduce and eliminate unsustainable patterns of production and consumption, and promote appropriate demographic policies.
- Environmental issues are best handled with the participation of all concerned citizens. Nations shall facilitate and encourage public awareness and participation by making environmental information widely available.
- Nations shall enact effective environmental laws, and develop national law regarding liability for the victims of pollution and other environmental damage. Where they have authority, nations shall assess the environmental impact of proposed activities that are likely to have a significant adverse impact.
- Nations should cooperate to promote an open international economic system that will lead to economic growth and sustainable development in all countries. Environmental policies should not be used as an unjustifiable means of restricting international trade.
- The polluter should, in principle, bear the cost of pollution.
- Nations shall warn one another of natural disasters or activities that may have harmful transboundary impacts.
- Sustainable development requires better scientific understanding of the problems. Nations should share knowledge and innovative technologies to achieve the goal of sustainability.
- The full participation of women is essential to achieve sustainable development. The creativity, ideals and courage of youth and the knowledge of indigenous people are needed too. Nations should recognize and support the identity, culture and interests of indigenous people.
- Warfare is inherently destructive of sustainable development, and Nations shall respect international laws protecting the environment in times of armed conflict, and shall cooperate in their further establishment.
- Peace, development and environmental protection are interdependent and indivisible.

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LAMPIRAN E

KEPENTINGAN SPESIS-SPESIS FLORA DALAM HUTAN HUJAN TROPIKA MALAYSIA

Values of tropical forest to man

Value		Remarks
1	Source of diverse types of materials	Capable of providing future crop plants. Centre of origin and diversity of many present-day and future crop plants.
2	Fruit trees	About 124 fruit-producing plants cultivated in Southeast Asia. In addition to already known plants, about 100 species of native fruit trees growing wild in forests. Some examples shown in Table 20.
3	Ornamental plants	Of 500 species currently cultivated in Southeast Asia, only 10 per cent originated locally. There are hundreds of species in the rainforests which have great potential.
4	Medicinal plants	More than 6,000 species known and used by local people in Southeast Asia. More than 50 per cent of these plants are forest based. The economic potential of these natural resources has not been fully realised.
5	Vegetables	Out of 90 species commercially grown in South-east Asia only 16 per cent are local. There are more than 300 species of native plants which have been consumed by the local population as cooked or raw vegetables.
6	Tubers and carbohydrates	Research shows that there are still hundreds of plant species which produce edible underground tubers or young shoots or stems containing high concentrations of starch or sugar. Currently only few of these are commercially cultivated.
7	Essential oils	In Southeast Asia, at least 60 species known to contain various types of essential oils.
8	Rattans	There are approximately 600 known species; only less than 15 species have been exploited commercially.
9	Resins, gums and tannins	These have not been fully studied and exploited.

Sumber Perolehan:

Sham Sani, Environment and Development in Malaysia, Kuala Lumpur: ISIS Malaysia, 1993

LAMPIRAN F

PETIKAN MANIFESTO BN, DAP, PAS DAN PARTI MELAYU SEMANGAT 46 YANG BERKAITAN DENGAN ALAM SEKITAR.

Manifesto BN Yang Berkaitan Dengan Alam Sekitar

7. MENGEKAL DAN MEMPERBAIKI ALAM SEKITAR

Kerajaan Barisan Nasional akan memelihara alam sekitar dengan:

a. Penggunaan sumber asli termasuk hutan secara terancang dan bertanggungjawab.

b. Mengurangkan pencemaran udara, laut dan daratan.

c. Mengambil kira alam sekitar semasa membangunkan negara.

d. Mengadakan sistem terkini bagi pelupusan barang buangan yang bertoksik dan sampah sarap.

e. Menjaga kebersihan punca air, pantai dan lautan.

f. Menanam semula hutan-hutan bagi mengganti kesan membalak dan mengindahkan alam sekeliling.

Manifesto DAP Yang Berkaitan Dengan Alam Sekitar

DEMOCRTISATION of the decision-making process to ensure that the interests of many are not sacrificed to the interests of the few, whether in decision about privatisation, massive compulsory land acquisitions or development projects affecting the environment and quality of life of all Malaysian.

Manifesto PAS Yang Berkaitan Dengan Alam Sekitar

14. ALAM SEKITAR: MEMELIHARA KURNIA ALLAH

PAS akan memberi perhatian serius ke atas perlunya penjagaan alam sekitar:

a. Undang-undang yang ada akan dikaji semula dan penguatkuasaan pencegahan pencemaran alam sekitar akan ditingkatkan.

b. Pengeluaran kayu balak akan dikawal di samping itu pemuliharaan dan pemulihan hutan akan ditingkatkan.

c. Memastikan semua perancangan industri akan mengambil kira kepentingan alam sekitar.

d. Lebih banyak 'green belt' atau 'dataran hijau' akan diwujudkan, di samping memelihara keaslian alam sekitar semulajadi.

Manifesto Parti Melayu Semangat 46 Yang Berkaitan Dengan Alam Sekitar

10. Pembangunan Berterusan dan Pemeliharaan Alam Sekitar

Pembangunan mestilah mengambil kira keperluan generasi akan datang. Penggunaan sumber asli tidak boleh dibuat secara gelojoh dan berlebihan. Masalah pencemaran alam sekitar akan diatasi. Ini termasuk membersihkan sungai-sungai kita yang kotor. Peraturan akan dikuatkuasakan supaya setiap projek pembangunan mesti melalui pemereksaan kesan alam sekitar yang ketat. Pembalakan, pengeluaran minyak dan perlombongan akan dikawal supaya generasi akan datang turut dapat menikmati kekayaan negara.

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LAMPIRAN G

SENARAI AKTA DAN ENAKMEN YANG BERKAITAN DENGAN ALAM SEKITAR DI MALAYSIA

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13. Medicine (Sales and Advertisement) Ordinance, No. 10, 1956.
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23. Akta Perbandaran dan Lembaga Bandaran (Pindaan), 1973.
24. Akta (Perancangan) Bandaraya Kuala Lumpur, Akta 107, 1973.
25. Akta Kualiti Alam Sekeliling, Akta 127, 1974.
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27. Akta Jalan, Parit dan Bangunan, Akta 133, 1974.
28. Akta Orang-orang Asli, 1954, Akta 134 (Pindaan), 1974.
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30. Akta Perancangan Bandar dan Desa, 1974.
31. Akta Racun Makhluk Perosak, Akta 149, 1974.
32. Akta Penghapusan Serangga Pembawa Penyakit, Akta 154, 1975.
33. Akta Perlindungan Hidupan Liar, Akta 76, 1972; (Pindaan), 1976.
34. Akta Bahan Purba, Akta 168, 1976.
35. Akta Kerajaan Tempatan, Akta 171, 1976.
36. Akta Perancangan Bandar dan Desa, Akta 172, 1976.
37. Akta Taman Negara, Akta 226, 1980.
38. Akta Lembaga Lebuhraya Malaysia, Akta 231, 1980.
39. Enakmen Pemeliharaan Babi, 1980.
40. Akta Pelesenan Tenaga Atom, Akta 304, 1984.
41. Akta Zon Ekonomi Eksklusif, Akta 311, 1984.
42. Akta Perhutanan Negara, Akta 313, 1984.
43. Akta Perikanan, 1963, Akta 317, 1985.

Sumber Perolehan:

Sham Sani, Abdul Samad Hadi dan Jamaluddin Md Jahi (ed.), Alam Sekitar dan Pengurusannya di Malaysia, Bangi: Working Group on Urban Ecosystem Malaysia National MAB Committee and MAB UNESCO, 1993

LAMPIRAN H

PRINSIP-PRINSIP SAINTIFIK BERKAITAN DENGAN ETIKA ALAM SEKITAR G. TYLER MILLER

Sceintific Principles

1. We cannot create or destroy matter, we can only change it from one form to another. Everything we think we have thrown away is still here with us in one form or another, there is no way. (*law of conservation of matter*)

2. There is no waste in functioning biological comunities: the waste or dead bodies of one form of life arae food or nutrients for other forms of life (*no-waste-in-nature principle*).

3. Organized and concentrated matter is high-quality matter than canusually be converted into useful resources at an affodable cost; disorganized and dispersed matter is low-quality matter than often costs too much to convert to a useful resource (*principle of matter quality*).

4. Don't dilute, disperse, mix, burn or burry matter, products ort wastes that can be recycled or reused (*principle of affodable recycling and reuse*).

5. We cannot create or destroy energy; we can only change it from one form to another. We can't get energy for nothing; it takes energy to get energy (*first law of energy, of law of conservation of energy*).

6. Organized, or consentrated, energy is high quality energy than can be used to do things; disorganized, or dilute, energy is low-quality energy that is not very useful (*principle of energy quality*)

7. In any conversion of energy from one form to another, high quality, useful energy is always degraded to lower-quality, less useful energy that can't be recycled to give high-quality energy; we can't break even in terms of energy quality (*second law of energy or law of energy-qulity degradation*).

8. We shouldn't use high-quality energy to do something that can be done with lower–quality energy; don't use a chain saw to cut butteror electricity to heat a house or household water (*principle of matchingenergy quality to energy tasks*).

9. Life on earth depends on the one-way flow of high-quality energy from the sun through the earth's life support systems and eventully back into space as low-quality heat, and the recycling of vital chemicals by a combination of combination of biological, geological, and chemical processes (*principle of energy flow and matter recycling*).

10. Each species and each individual organism can tolerate only a certain range on environmental conditions (*range-of-tolerance principle*).

11. Too much of too little of a physical or chemical factor can limit or prevent the growth of a population in a particular place (*limiting factor principle*).

12. No population can keep growing indefinitely (*principle of carrying capacity*).

13. Every species has a specific role to play in nature (*ecological-niche principle*).

14. Averange precipitation and temperature are the major factors determining whether a particular land area is a desert, grassland, or forest (*climate-and-vegetation principle*).

15. A population of a particular species can change its size, age structure, and distribution to avoid or reduce the harmful effects of an environmental stress (*principle of population dynamics*).

16. A population of a particular species can better adapt to changes in environmental conditions by changing its genetic structure and producing more offspring who can tolerate the change conditions (*principle of natural selection and biological evolution*).

17. Biological communities can adapt to sevre changes inenvironmental conditions by gradually developing different and often more complex communities (*principle of ecological succession*).

18. Over billions of years, nature has evolved a variety of species (species diversity), genetic varietybwithin species (genetic diversity), genetic variety within species (genetic diversity), and natural systems (ecosystem diversity) in response to environmental change and as mechanisms for responding to future (*principle of bioiversity*).

19. Earth's solid outer layer (crust and upper mantle) is made up of several gigantic floating plates that overt millions of years move and in the processshape and alter the earth's crust, cause continents to move, and concentrate some of the minerals we extract and use (*theory of plate tectonics*)

20. Earth's atmosphere , hydrosphere, lithosphere, and forms of life are continually changing in response to changes is sollar input, movements of Earth's crust, other natural changes,and changes brought about by humans and other living organisms (*dynamic-Earth principle*)

21. Species that cannot adapt to changing environmental conditions brought about by natural processes or by human actions become extinct forever (*adapt-or-die-principle, or the-earth-can easily-get-along-without-us principle*).

22. Earth's life-support systems can take much stress and abuse, but there are limits (*law of limits*)

23. In nature we can never do just one thing: everything we do creates effect that are often unpredictable (*first law of ecology or principle of ecological backlash*)

24. Everything is connected to and intermingled with everything else: we are all in this together (*second law of ecology or prinsiple of interdependence*)

25. Any chemical that we produce dhould not interfere with earth's natural biogeochemical cycles in way that degrade earth's life-support system for us or other species (*third law of ecology*)

26. We can't expect to reduce the dangers from most hazards to zero, but the risk can greatly reduced (*principle of risk-benefit analysis*)

27. Any system that depends on fallible human for it design, operation, and maintenance will sooner or later fail (*limitation of risk-benefit analysis principle*)

28. Nature is not only more complex than we think, but also more complex than we can ever think (*principle of complexity*)

Sumber Perolehan:

Miller, G. Tyler Jr., *Living in The Environment*, Belmont: Wadsworth Publishing Company, 1988

LAMPIRAN I

SENARAI KAJIAN PROJEK EMPANGAN HIDROELEKTRIK BAKUN

LIST OF STUDIES

1. "The Sarawak Masterplan Study for Power System Development", SAMA Consortium, German Agency of Technical Cooperation Ltd., April 1981.

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3. "Bakun Hydroelectric Project, Sarawak, Malaysia, In-situ Rock Mechanic Tests" Report No. 8404/146, Interfels, Austria, 1984.

4. "Bakun Hydroelectric Project, Laboratory Tests on Construction Material" Snowy Mountains Engineering Corporation and Maeda-Okumura Joint Venture, September 1986.

5. "Bakun Hydroelectric Project, Construction Materials Investigation" Snowy Mountains Engineering Corporation and Maeda-Okumura Joint Venture, September 1986.

6. "Bakun Hydroelectric Project, Report on Field Compaction Trial (Rolling Trial) on Mudstone and Results of Laboratory Test" Snowy Mountains Engineering Corporation and Maeda-Okumura Joint Venture, September 1986.

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8. "Tender Design of Bakun Hydroelectric Project and the Associated HVAC Schemes" SAMA Consortium, November 1986.

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17. "Second Expert Opinion Seminar on the HVDC Cable Link", National Electricity Board, Kuala Lumpur, Malaysia, October 1984.

18. "Further Studies on HVDC Transmission Sarawak-Peninsular Malaysia", Fitchner Consulting Engineering/Lahmeyer International GmbH, German Agency for Technical Cooperation, 1986.

19. "Preliminary Report on Seabed Study along the HVDC Submarine Cable Route interconnecting Sarawak and Peninsular Malaysia" RF Reedereigemeinschaft Forschungsschiffahrt GmbH, F.R. Germany, 1982.

20. "System Studies of Sarawak-Peninsular Malaysia HVDC Transmission" Swed Power, Swedish Agency for Technical Cooperation, 1986.

21. "Studies Related to HVDC Transmission Project, Sarawak-Peninsular Malaysia" Danish Power Consult A/S, 1987.

22. "National Energy Planning Study", Motor-Colombus, 1985.

23. "Power Sector Investment Study", Motor-Colombus, 1985.

24. "Malaysia Power Sector Issues and Options" The World Bank, 1987.

25. "Bakun Hydroelectric Project: Construction Materials Investigation Final Report, Appendix D, Test Pit Logs", Snowy Mountains Engineering Corporation and Maeda-Okumura Joint Venture, September 1986.

26. Bakun HEP Borehole Logs.

Sumber Perolehan:

Economic Planning Unit (EPU), *Bakun Hidroelectric Project Green Energy for the Future*, Kuala Lumpur, EPU Jabatan Perdana Menteri, 1996

LAMPIRAN J

PERINTAH KUALITI ALAM SEKELILING (PENILAIAN KESAN ALAM SEKELILING) 1987

PERINTAH KUALITI ALAM SEKELILING (AKTIVITI YANG DITETAPKAN) (PENILAIAN KESAN KEPADA ALAM SEKELILING) 1987*

PADA menjalankan kuasa-kuasa yang diberi oleh seksyen 34A Akta Kualiti Alam Sekeliling 1974, Menteri, selepas berunding dengan Majlis Kualiti Alam Sekeliling, membuat perintah yang berikut:

1. Nama dan mula berkuatkuasa.

Perintah ini bolehlah dinamakan **Perintah Kualiti Alam Sekeliling (Aktiviti yang Ditetapkan) (Penilaian Kesan kepada Alam Sekeliling) 1987** dan hendaklah mula berkuatkuasa pada 1hb April 1988.

2. Aktiviti-aktiviti yang ditetapkan.

Aktiviti-aktiviti yang dinyatakan dalam Jadual adalah ditetapkan sebagai aktiviti-aktiviti yang ditetapkan.

3. Perintah tidaklah terpakai bagi aktiviti tertentu yang ditetapkan.

Berhubungan dengan Negeri Sarawak, Perintah ini tidaklah terpakai berkenaan dengan aktiviti-aktiviti yang ditetapkan yang disenaraikan dalam Jadual Pertama kepada Perintah Sumber Asli dan Persekitaran (Aktiviti yang Ditetapkan) 1994 yang diterbitkan dalam Bahagian II *Warta* Kerajaan Sarawak bertarikh 11hb Ogos 1994, kecuali jika terdapat apa-apa ketakkonsistenan di antara kedua-dua Perintah itu, Perintah ini adalah terpakai.

4. Butiran dalam Jadual masih terpakai bagi Sarawak.

Walau apa pun peruntukan perenggan 3, aktiviti-aktiviti yang ditetapkan yang disenaraikan sebagai Butiran 2, 5(*a*) dan (*b*), 8, 9, 10, 12, 13(*a*), (*c*) dan (*d*), 15, 16 dan 18 dalam Jadual hendaklah terus terpakai berkenaan dengan Negeri Sarawak.

JADUAL

1. PERTANIAN:

   (*a*) Skim-skim kemajuan tanah yang meliputi kawasan seluas 500 hektar atau lebih untuk menjadikan tanah hutan tanah pengeluaran pertanian.

   (*b*) Program-program pertanian yang memerlukan penempatan semula 100 keluarga atau lebih.

   (*c*) Pembangunan estet pertanian yang meliputi kawasan seluas 500 hektar atau lebih yang melibatkan perubahan jenis-jenis kegunaan pertanian.

2. LAPANGAN TERBANG:

   (*a*) Pembinaan lapangan-lapangan terbang (yang mempunyai landasan kapal terbang sepanjang 2,500 meter atau lebih).

   (*b*) Pembinaan landasan kapal terbang di dalam taman-taman negeri dan negara.

3. SALIRAN DAN PENGAIRAN:

   (*a*) Pembinaan ampangan-ampangan dan tasik-tasik buatan manusia dan

* *Diterbitkan sebagai P.U. (A) 362/87 dan dipinda oleh P.U. (A) 117/95.*

pembesaran bukan semulajadi tasik-tasik dengan kawasan permukaan seluas 200 hektar atau lebih.

(*b*) Saliran kawasan paya, kawasan hidupan liar atau hutan dara yang meliputi kawasan seluas 100 hektar atau lebih.

(*c*) Skim-skim pengairan yang meliputi kawasan seluas 5,000 hektar atau lebih.

4. TEBUSGUNA TANAH:

Penebusgunaan kawasan pantai yang melibatkan kawasan seluas 50 hektar atau lebih.

5. PERIKANAN:

(*a*) Pembinaan labuhan-labuhan pendaratan ikan.

(*b*) Peluasan labuhan yang melibatkan pertambahan sebanyak 50 peratus atau lebih dalam keupayaan pendaratan ikan setahun.

(*c*) Projek-projek akuakultur berasaskan penggunaan tanah berserta dengan pembersihan hutan paya laut meliputi kawasan seluas 50 hektar atau lebih.

6. PERHUTANAN:

(*a*) Pengubahan penggunaan tanah hutan bukit kepada kegunaan tanah lain meliputi kawasan seluas 50 hektar atau lebih.

(*b*) Pembalakan atau pengubahan penggunaan tanah hutan kepada kegunaan tanah lain di dalam kawasan tadahan di kolam-kolam takungan air yang digunakan bagi bekalan air perbandaran, pengairan atau penjanaan kuasa hidro atau dalam kawasan-kawasan yang bersempadan dengan taman-taman negeri dan negara dan taman-taman laut negara.

(*c*) Pembalakan meliputi kawasan seluas 500 hektar atau lebih.

(*d*) Pengubahan penggunaan kawasan hutan paya laut bagi kegunaan perindustrian, perumahan atau pertanian meliputi kawasan seluas 50 hektar atau lebih.

(*e*) Pembersihan kawasan hutan paya laut di pulau-pulau bersebelahan dengan taman-taman laut negara.

7. PERUMAHAN:

Pemajuan perumahan meliputi kawasan seluas 50 hektar atau lebih.

8. INDUSTRI:

(*a*) Kimia	–	Jika keupayaan pengeluaran bagi setiap hasil keluaran atau gabungan hasil keluaran melebihi 100 tan metrik/hari.	
(*b*) Petrokimia	–	Semua saiz.	
(*c*) Bukan besi	–	Peleburan utama:	
		Aluminium	– semua saiz.
		Kuprum	– semua saiz.
		Lain-lain	– mengeluarkan 50 tan metrik/hari atau lebih hasil keluaran.
(*d*) Bukan logam	–	Simen	– bagi truput batu hangus sebanyak 30 tan metrik/jam atau lebih.
		Kapur	– 100 tan metrik/hari kapur atau lebih dengan menggunakan relau putar atau 50 tan metrik/hari atau lebih dengan menggunakan relau tegak.

(*e*) Besi dan besiwaja	–	Memerlukan bijih besi sebagai bahan mentah bagi pengeluaran melebihi 100 tan metrik/hari; atau
	–	Menggunakan besi sekerap sebagai bahan mentah bagi pengeluaran melebihi 200 tan metrik/hari.
(*f*) Tempat membina kapal	–	Tanan Berat Mutan melebihi 5,000 tan metrik.
(*g*) Industri kertas dan pulpa	–	Keupayaan pengeluaran melebihi 50 tan metrik/hari.

9. INFRASTRUKTUR:

(*a*) Pembinaan hospital dengan alur keluar dalam kawasan permukaan pantai yang digunakan bagi tujuan rekreasi.

(*b*) Pembangunan estet perindustrian bagi industri-industri sederhana dan berat meliputi kawasan seluas 50 hektar atau lebih.

(*c*) Pembinaan lebuhraya bandar.

(*d*) Pembinaan lebuhraya nasional.

(*e*) Pembinaan bandar-bandar baru.

10. PELABUHAN:

(*a*) Pembinaan pelabuhan-pelabuhan.

(*b*) Peluasan pelabuhan yang melibatkan 50 peratus atau lebih dalam keupayaan pengendalian setahun.

11. PERLOMBONGAN:

(*a*) Perlombongan bahan galian di kawasan-kawasan baru di mana pajakan perlombongan meliputi jumlah kawasan melebihi 250 hektar.

(*b*) Pemprosesan bijih, termasuk pemekatan aluminium, kuprum, emas atau tantalum.

(*c*) Pengorekan pasir yang melibatkan kawasan seluas 50 hektar atau lebih.

12. PETROLEUM:

(*a*) Pemajuan medan minyak dan gas.

(*b*) Pembinaan talian paip yang panjangnya melebihi 50 kilometer di daratan dan di luar pantai.

(*c*) Pembinaan kemudahan-kemudahan bagi pengasingan, pemerosesan, pengendalian dan penstoran minyak dan gas.

(*d*) Pembinaan kilang-kilang penapis minyak.

(*e*) Pembinaan depot keluaran bagi penstoran petrol, gas atau diesel (tidak termasuk stesen-stesen servis) yang terletak di dalam lingkungan 3 kilometer dari kawasan perdagangan, perindustrian atau kediaman dan yang mempunyai keupayaan penstoran tergabung sebanyak 60,000 tong atau lebih.

13. PENJAAN DAN PEMANCARAN KUASA:

(*a*) Pembinaan stesen janakuasa stim yang menggunakan bahan api fosil dan yang mempunyai keupayaan melebihi 10 megawatt.

(*b*) Skim-skim ampangan dan kuasa hidroelektrik dengan salah satu atau kedua-dua yang berikut:

(i) ampangan-ampangan yang ketinggiannya melebihi 15 meter dan struktur-struktur sampingan yang meliputi kawasan melebihi 40 hektar;

(ii) kolam-kolam takungan air dengan kawasan permukaan melebihi 400 hektar.

(*c*) Pembinaan stesen-stesen janakuasa kitar padu.

(*d*) Pembinaan stesen janakuasa yang menggunakan bahan api nuklear.

14. KUARI:

Cadangan penguarian agregat, batu kapur, silika, kuarzit, batu pasir, marmar dan batu bangunan untuk hiasan yang termasuk dalam lingkungan 3 kilometer dari kawasan kediaman, perniagaan atau perindustrian yang sedia wujud atau mana-mana kawasan yang berkenaan dengannya telah ada diberikan lesen, permit atau kelulusan bagi pemajuan kediaman, perniagaan atau perindustrian.

15. KERETAPI:

(*a*) Pembinaan laluan-laluan baru.

(*b*) Pembinaan landasan-landasan cabang.

16. PENGANGKUTAN:

Pembinaan projek-projek Pengangkutan Laju Massa.

17. PEMAJUAN REKREASI DAN PERANGINAN:

(*a*) Pembinaan kemudahan-kemudahan tempat peranginan atau hotel-hotel yang mempunyai lebih daripada 80 bilik di kawasan pantai.

(*b*) Pemajuan tempat peranginan atau hotel yang meliputi kawasan seluas 50 hektar atau lebih di kawasan bukit.

(*c*) Pemajuan kemudahan-kemudahan pelancongan atau rekreasi di dalam kawasan taman-taman negara.

(*d*) Pemajuan kemudahan-kemudahan pelancongan atau rekreasi di pulau-pulau dalam perairan sekeliling yang telah diwartakan sebagai taman-taman laut negara.

18. PENGOLAHAN DAN PELUPUSAN BUANGAN:

(*a*) Buangan Toksik dan Berbahaya –

(i) Pembinaan loji penuruan.

(ii) Pembinaan loji pulihguna (luar-tapak).

(iii) Pembinaan loji pengolahan air buangan (luar-tapak).

(iv) Pembinaan kemudahan penimbusan tanah selamat.

(v) Pembinaan kemudahan penstoran (luar-tapak).

(*b*) Buangan Pepejal Perbandaran –
  (i) Pembinaan penunuan.
  (ii) Pembinaan loji kompos.
  (iii) Pembinaan loji pulihguna/gunasemula.
  (iv) Pembinaan kemudahan-kemudahan penimbusan tanah buangan pepejal.

(*c*) Kumbahan Perbandaran –
  (i) Pembinaan Loji pengolahan air buangan.
  (ii) Pembinaan alur-keluar laut.

19. BEKALAN AIR:

(*a*) Pembinaan ampangan-ampangan atau kolam takungan air yang kawasan permukaannya seluas 200 hektar atau lebih.

(*b*) Pemajuan air dalam tanah bagi bekalan air perindustrian, pertanian atau kawasan bandar yang melebihi 4,500 meter padu sehari.

Diperbuat pada 30hb September 1987.

DATUK AMAR STEPHEN K.T. YONG,
Menteri Sains, Teknoloji dan Alam Sekitar

Sumber Perolehan:

Lembaga Penyelidikan Undang-undang, Akta Kualiti Alam Sekeliling 1974 (Akta 127) & Peraturan-peraturan dan Perintah-perintah, Kuala Lumpur: International Law Book Services, 1995

LAMPIRAN K

REKOD BEBERAPA KEJADIAN GEMPA BUMI RIS DI DUNIA

Empangan akibatkan gempa bumi di luar negara

Empangan Koyna di Maharashtra, India dipercayai merupakan tempat takungan air paling kuat yang menyebabkan gempa bumi sehingga kini.

Pada 11 Disember 1967, ia telah mengakibatkan gegaran sebanyak 6.7 Skala Richter, di mana kampung Koynanagar diratakan — menyebabkan kematian hampir 180 orang, kecederaan 2,200 dan beribu-ribu lagi kehilangan rumah.

Pusat gempa bumi dan beberapa kejutan di permukaan dan selepasnya berlaku sama ada dalam kawasan berhampiran empangan atau di bawah tempat takungan air itu.

Walaupun mengalami kerosakan yang teruk, struktur empangan masih mampu menahan tenaga gegaran gempa bumi, sekiranya empangan itu gagal menahan gegaran atau pecah, lebih banyak nyawa yang akan melayang.

Pada bulan September 1993, kawasan takungan air Tirna di Maharashtra, India juga dipercayai menyebabkan gempa bumi dengan 6.4 Skala Richter yang meratakan bandar Killari, mengakibatkan 10,000 penduduk terbunuh.

Sememangnya menarik untuk dilihat kawasan takungan air Tirna adalah kecil berbanding dengan empangan-empangan lain yang lebih besar di India dan hanya mengandungi sebanyak 15 meter air semasa gempa bumi.

Selanjutnya, kawasan Killari dianggap sebagai tidak mempunyai risiko gempa bumi memandangkan gelinciran yang berada di bawahnya tidak boleh mengalami rekahan sekurang-kurangnya 65 juta tahun.

Pada tahun 1963, empangan Vaiont di Itali telah mengakibatkan gempa bumi.

Gegaran gempa bumi dicatatkan hampir berlaku sebaik sahaja kawasan takungan itu dipenuhi air. Gegaran itu dipercayai telah menggugat 350 juta meter padu serpihan batu di kawasan pergunungan di hadapan empangan.

Walaupun sakar memikirkan bongkah batu akan terus menggelongsor secara perlahan, namun disebabkan oleh hujan lebat yang mencurah-curah selama berhari-hari, kawasan takungan air itu bertambah dari pada 150 meter kepada 180 meter dalamnya — memaksa kepada gegaran dan mempercepatkan pergerakan ke bawah bongkah batu berkenaan.

Akhirnya bongkah batu Gunung Toc pecah dan jatuh ke dalam tempat takungan air memaksa kepada gelombang besar yang lebih tinggi daripada empangan sepanjang 110 meter. Malapetaka ini meliputkan 2,600 nyawa terkoroan di empat buah kampung di hulu sungai.

Sumber Perolehan:

Persatuan Pengguna Pulau Pinang (CAP), Utusan Pengguna, Februari, 1996.