UNIVERSITAS KOMPUTER INDONESIA
JURUSAN SASTRA INGGRIS
KAMPUS I : JL. DIPATI UKUR 112 TELP. (022) 2504119, 2533603 BANDUNG 40132
KAMPUS II : JL. DIPATI UKUR 116 TELP. (022) 2533676, 2506634 BANDUNG 40132
KAMPUS III : JL. DIPATI UKUR 102 TELP. (022) 2503624, FAX. 2533754 BANDUNG 40132
KAMPUS IV : JL. DIPATI UKUR 114 TELP. (022) 2506553, 2508412 BANDUNG 40132

LEMBAR PENERIMAAN

(diisi oleh instansi/perusahaan)

Yang bertanda tangan di bawah ini:

Perusahaan/Instansi : Pusat Litbang SDA

Nama : Rahmat Suria Lubis, ST., MT

Jabatan : Kasubid Pengembangan Kerjasama

Alamat : Jl. Ir. H. Djuanda NO 193
Bandung

Telepon/Ponsel : 085220149994

Dengan ini menerangkan bahwa mahasiswa:

Nama : TRI YULIANTI

Program Studi : STRATA 1 (S1)

NIM : 637 06012

Semester/Kelas : IX / 06 S1 - 1

adalah benar mahasiswa yang mengajukan permohonan Kuliah Kerja Lapangan di perusahaan/instansi kami dan dengan ini kami menyatakan bahwa mahasiswa tersebut kami terima untuk melaksanakan KKL dengan ketentuan dan persyaratan yang kami tetapkan.

Demikian kami menerangkan untuk diketahui oleh pihak-pihak yang bersangkutan dan agar dipergunakan sebagaimana mestinya.

Bandung, 02 AGUSTUS 2010

Pejabat Penerima

NIP. 19751219 200502 1001

Pemohon

TRI . Y

NIM. 637 06 012

KEMENTERIAN PEKERJAAN UMUM
BADAN PENELITIAN DAN PENGEMBANGAN
PUSAT PENELITIAN DAN PENGEMBANGAN SUMBER DAYA AIR
Jl. Ir. H. Juanda 193 Bandung 40135, Tlp. : (022) 2501083; 2504053; 2501554; 2500507
Fax. : (022) 2500163; PO. Box: 841; E-mail : pusat@pusair-pu.go.id; http://www.pusair-pu.go.id

SURAT KETERANGAN

NOMOR : 98/SKT/La/2010

Merujuk pada surat : Dekan Fakultas Sastra
Universitas Komputer Indonesia
Nomor : 042/KP/Dk-FS/UNIKOM/VII/2010
Tanggal : 3 Agustus 2010
perihal Permohonan Ijin Praktek Kerja Lapangan, atas nama :

NO	NIM	NAMA	JURUSAN	PROG. STUDI
1.	63706001	IQBAL FAUZI	SASTRA INGGRIS	S1
2.	63706012	TRI YULIANTI	SASTRA INGGRIS	S1
3.	63706016	EMA NURMALASARI	SASTRA INGGRIS	S1
4.	63707016	ANDREAS B M L TOBING	SASTRA INGGRIS	S1

Dengan ini Pusat Litbang Sumber Daya Air menyatakan BERSEDIA / ~~TIDAK BERSEDIA~~ *) menerima mahasiswa tersebut diatas, untuk melaksanakan praktek kerja lapangan pada periode 3 Agustus s/d 31 Agustus 2010, dengan pembimbing Bapak Rahmat Suria Lubis, S.T. M.T., Kasubbid Pengembangan Kerjasama.

Bandung, 3 Agustus 2010
A.n Kepala Bidang PKSK
Kasubbid Pengembangan Keahlian,

KEMENTERIAN PEKERJAAN UMUM
PUSAT PENELITIAN DAN PENGEMBANGAN SUMBER DAYA AIR
BADAN PENELITIAN DAN PENGEMBANGAN

Kunti Savitrie, SE
NIP. 195803111987032003

Tembusan Kepada Yth.:
1. Kepala Pusat Sumber Daya Air (sebagai laporan);
2. Kepala Bidang Program dan Kerjasama;
3. Kepala Bidang PKSK;
4. Arsip.

*) coret yang tidak perlu

UNIVERSITAS KOMPUTER INDONESIA
FAKULTAS SASTRA
JURUSAN SASTRA INGGRIS
DAN
SASTRA JEPANG

KAMPUS I : JL. DIPATI UKUR 112 TELP. (022) 2504119, 2533603 BANDUNG 40132
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Bandung, 19 Juli 2010

Nomor : 042/KP/Dk-FS/UNIKOM/VII/2010
Lampiran : -
Perihal : Permohonan Izin Praktek

Yth. Bapak/ibu
Kepala bagian Program Kerja
Pusat Litbang Sumber Daya Air (PUSAIR)
Jl. Ir. H. Juanda No. 193 Bandung

Dengan hormat,

Dekan Fakultas Sastra yang bertanda tangan di bawah ini mengajukan permohonan kepada Bapak/Ibu dapat kiranya menerima mahasiswa kami berikut ini untuk melaksanakan kerja praktek di Perusahaan yang Bapak/Ibu pimpin.

NO	NIM	NAMA	JURUSAN	PROG. STUDI
1.	63706001	IQBAL FAUZI	SASTRA INGGRIS	S1
2.	63706012	TRI YULIANTI	SASTRA INGGRIS	S1
3.	63706016	EMA NURMALASARI	SASTRA INGGRIS	S1
4.	63707016	ANDREAS B M L TOBING	SASTRA INGGRIS	S1

Pelaksanaan kerja praktek disesuaikan dengan jadwal yang ditentukan oleh instansi Bapak/Ibu untuk waktu satu sampai tiga bulan.

Demikian surat permohonan di sampaikan. Atas perhatian dan kerja samanya, kami ucapkan terima kasih.

Dekan,

Prof.Dr.H. Moh. Tajuddin, M.A

Tembusan :
1. Yth. Ketua Jurusan Sastra Inggris
2. Arsip

UNIVERSITAS KOMPUTER INDONESIA
JURUSAN SASTRA INGGRIS
KAMPUS I : JL. DIPATI UKUR 112 TELP. (022) 2504119, 2533603 BANDUNG 40132
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KAMPUS IV : JL. DIPATI UKUR 114 TELP. (022) 2506553, 2508412 BANDUNG 40132

Absensi Praktek Kerja

Nama : TRI YULIANTI
NIM : 637 06012
Kelas : 06 SI-1

Jurusan : SASTRA INGGRIS
Fakultas : SASTRA
Jenjang : S1

Keterangan Lokasi / Tempat Praktek Kerja

Nama Instansi / Perusahaan : PUSAIR
Alamat : Jln. Ir. H. Juanda
Objek / Materi Praktek Kerja : Terjemahan

Agenda Acara Praktek Kerja

No	TGL	Uraian	Paraf MHS	Paraf Perusahaan	Ket
1	26/8 2010	Pengenalan tugas KKL			
2	27/8 2010	Pemberian tugas KKL			
3	30/8 2010	Terjemahan hal 3 - 5			
4	31/8 2010	Terjemahan hal 6			
5	1/9 2010	Terjemahan hal 7 - 12			
6	2/9 2010	Terjemahan hal 7 - 12			
7	3/9 2010	Terjemahan hal 12			
8	6/9 2010	Terjemahan hal I - II			
9	7/9 2010	Terjemahan hal III - IV			
10	8/9 2010	Terjemahan hal V			
11	13/9 2010	Edit hal 3-6			
12	15/9 2010	Edit hal 7-12			
13	16/9 2010	Edit hal I - V			
14	26/9 2010	Penggabungan Tugas KKL			
15	27/9 2010	EDIT All			

Mengetahui,
Ketua Jurusan Sastra Inggris

Retno Purwani Sari,S.S.,M.Hum
4127.20.03.004

Website : http://www.unikom.ac.id
E-mail : si@unikom.ac.id

UNIVERSITAS KOMPUTER INDONESIA
JURUSAN SASTRA INGGRIS
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KAMPUS III : JL. DIPATI UKUR 102 TELP (022) 2503624, FAX. 2533754 BANDUNG 40132
KAMPUS IV : JL. DIPATI UKUR 114 TELP (022) 2506553 2508412 BANDUNG 40132

PENILAIAN PRAKTEK KERJA LAPANGAN
UNIVERSITAS KOMPUTER INDONESIA

Nama Mahasiswa/i : TRI YULIANTI
NIM : 637 06.012
Jurusan : SASTRA INGGRIS
Program Studi : S1-1
Nama Perusahaan : PUSAT LITBANG SUMBER DAYA AIR
Alamat Perusahaan & Telepon : Jln. Ir. H. Juanda 193
Waktu Praktek Kerja : 09.00 - 15.00 WIB
Nama Pejabat Penilai : Ibu CONNY AMALIA
Jabatan : KEPALA SUB DIVISI KERJA SAMA

NO	ASPEK YANG DINILAI	NILAI	NILAI HURUF
1	Disiplin Dalam Kerja	80	A
2	Kemampuan Menyelesaikan Tugas	87	A
3	Prestasi Kerja	80	A
4	Inisiatif	86	A
5	Kepribadian	85	A

JUDUL LAPORAN PRAKTEK KERJA LAPANGAN

TRANSLATION OF COMPOUND WORDS found in the BOOKLET "60 YEARS OF YOUR SAFETY and Well-being

Komentar Pejabat Penilai Atas Prestasi Kerja Mahasiswa/i UNIKOM

.....

NA	HURUF	KETERANGAN
80 ≤ NA ≤ 100	A	Sangat Baik
70 ≤ NA ≤ 79	B	Baik
55 ≤ NA ≤ 69	C	Cukup
41 ≤ NA ≤ 54	D	Kurang
0 ≤ NA ≤ 40	E	Buruk

Bandung, 26 September 200

Mengetahui,
Ketua Jurusan Sastra Inggris

Retno Purwani Sari, S.S., M.Hum
NIP. 4127.20.03.004

Pembimbing Pelaksanaan Praktek Kerja

KEMENTERIAN PEKERJAAN UMUM
BADAN PENELITIAN DAN PENGEMBANGAN
PUSAT PENELITIAN DAN PENGEMBANGAN SUMBER DAYA AIR

Rahmat Suria Lubis
(Tanda Tangan & Cap)

Website : http://www.unikom.ac.id
E-mail : si@unikom.ac.id

ABSENSI BIMBINGAN

Nama : TRI YULIANTI

Kelas : 06 S1-1

Jurusan : Sastra Inggris

Pembimbing : Asih Prihandini S.S., M.Hum.

Judul Laporan KKL : The Translation of Compound Words found in a Booklet Entitled "60 Years of Service for Your Safety and Well-being"

NO	TGL	MATERI BIMBINGAN	PARAF DOSEN
1	11/10 '10	Ragangan Laporan	
2	21/10 '10	Revisi chapter 1, 2	
3	22/10 '10	Revisi judul	
4	22/10 '10	Revisi chapter 3	
5	5/11 '10	Revisi chapter 1, 2, 3	
6	16/11 '10	Revisi chapter 1, 2, 3	
7	18/11 '10	Revisi chapter 1, 2, 3	
8	20/11 '10	Revisi chapter 1, 2, 3 4	
9	24/11 '10	Revisi chapter 4	
10	22/11 '10	Revisi abstract, acknowledgment	
11	23/11 '10	Revisi abstract	
12	24/11 '10	Revisi abstract, appendices	
13	25/11 '10	proof reading	
14			
15			
16			

Mengetahui,
Ketua Jurusan Sastra Inggris

Retno Purwani Sari, S.S., M.Hum.
4127.20.03 004

Catatan :

1. Absensi ini harus dibawa setiap kali bimbingan.
2. Absensi ini wajib diparaf oleh mahasiswa dan dosen pembimbing.
3. Proses Bimbingan dilaksanakan minimal 12 kali pertemuan.
4. Fotocopy absensi ini harus dilampirkan dalam laporan.

DATA

Kata Pengantar (Foreword)



Dalam rangka penyebarluasan informasi tentang Pusat Penelitian dan Pengembangan Sumber Daya Air (Puslitbang Sumber Daya Air), buku profil ini disusun dengan memuat gambaran kegiatan-kegiatan yang dilakukan, potensi yang dimiliki serta informasi lainnya untuk memudahkan interaksi dan kerja-sama kemitraan antara Puslitbang dengan pihak-pihak yang berkepentingan.

Buku profil ini antara lain mencakup berbagai informasi, sejarah dan perkembangan Puslitbang Sumber Daya Air, serta keberadaan Puslitbang Sumber Daya Air dalam struktur kelembagaan Departemen Pekerjaan Umum - RI. Kegiatan bidang dan balai serta kualifikasi sumber daya manusia yang ada di lingkungan Puslitbang Sumber Daya Air juga diuraikan secara singkat.

Selanjutnya kami berniat untuk terus menambah jumlah informasi serta mengaktualisasikan penyempurnaan penampilan profil secara bertahap dan dapat pula disajikan dalam jaringan internet melalui alamat homepage : www.pusair-pu.go.id

Kami mengucapkan terima kasih kepada semua pihak yang turut terlibat dalam penyusunan buku profil ini dan berharap dapat bermanfaat bagi masyarakat. Kami menunggu segala kritik dan saran yang bersifat konstruktif agar penyusunan selanjutnya dapat menjadi lebih baik.

To introduce and to disseminate the salient features of the Research Centre for Water Resources (RCWR), this booklet is prepared to accommodate the general overview of activities, prospective potential and other related information. This information is meant to be the instrument for allowing the establishment of communication networks as well as partnership with other related institutions.

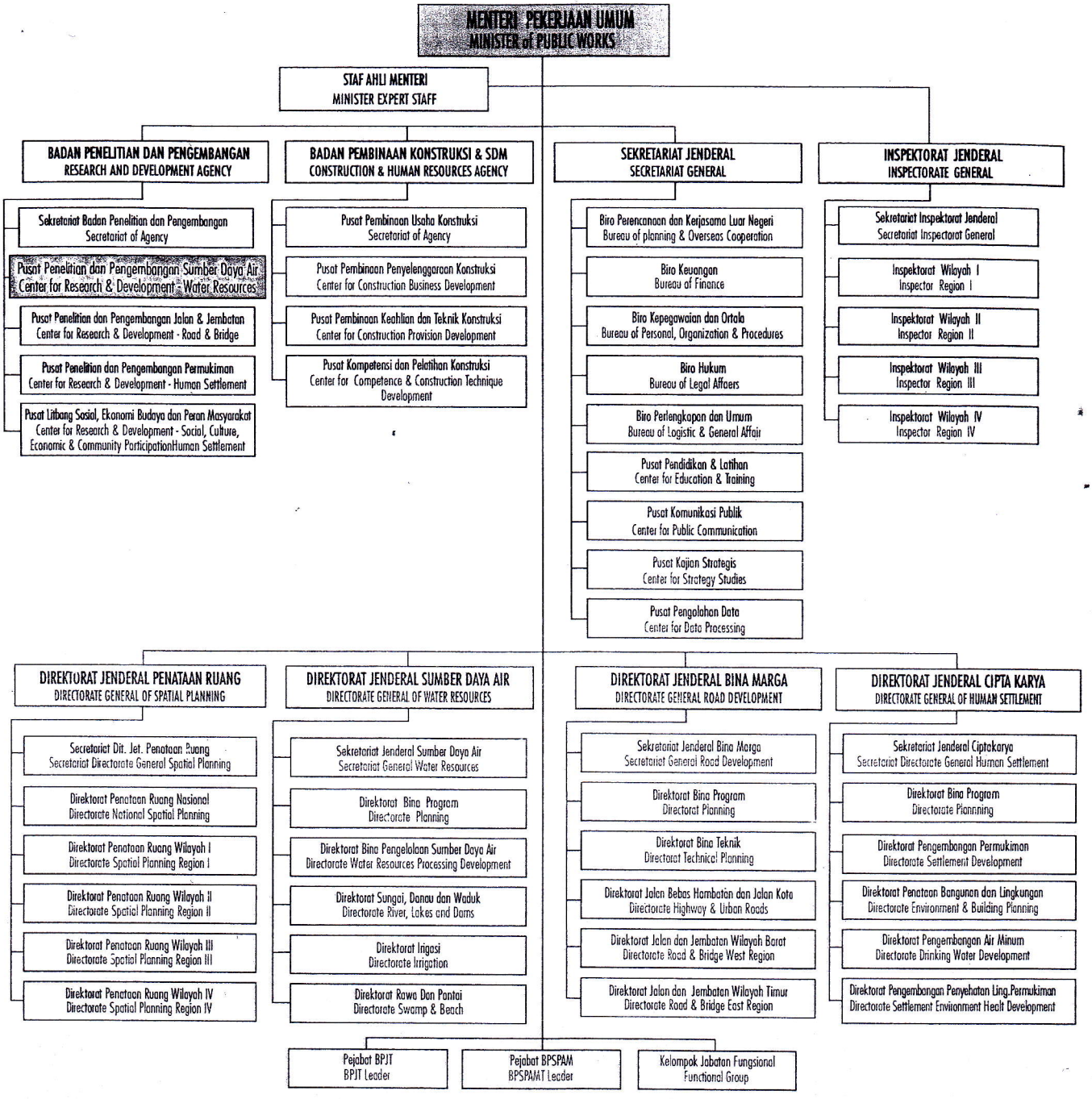
This booklet contains information about the historical background of the RCWR, present status and its role within the structural organization of the Ministry of Public Works of the Republic of Indonesia. It includes the underlying roles and activities of its Divisions, Laboratories as well as qualification of Human Resources.

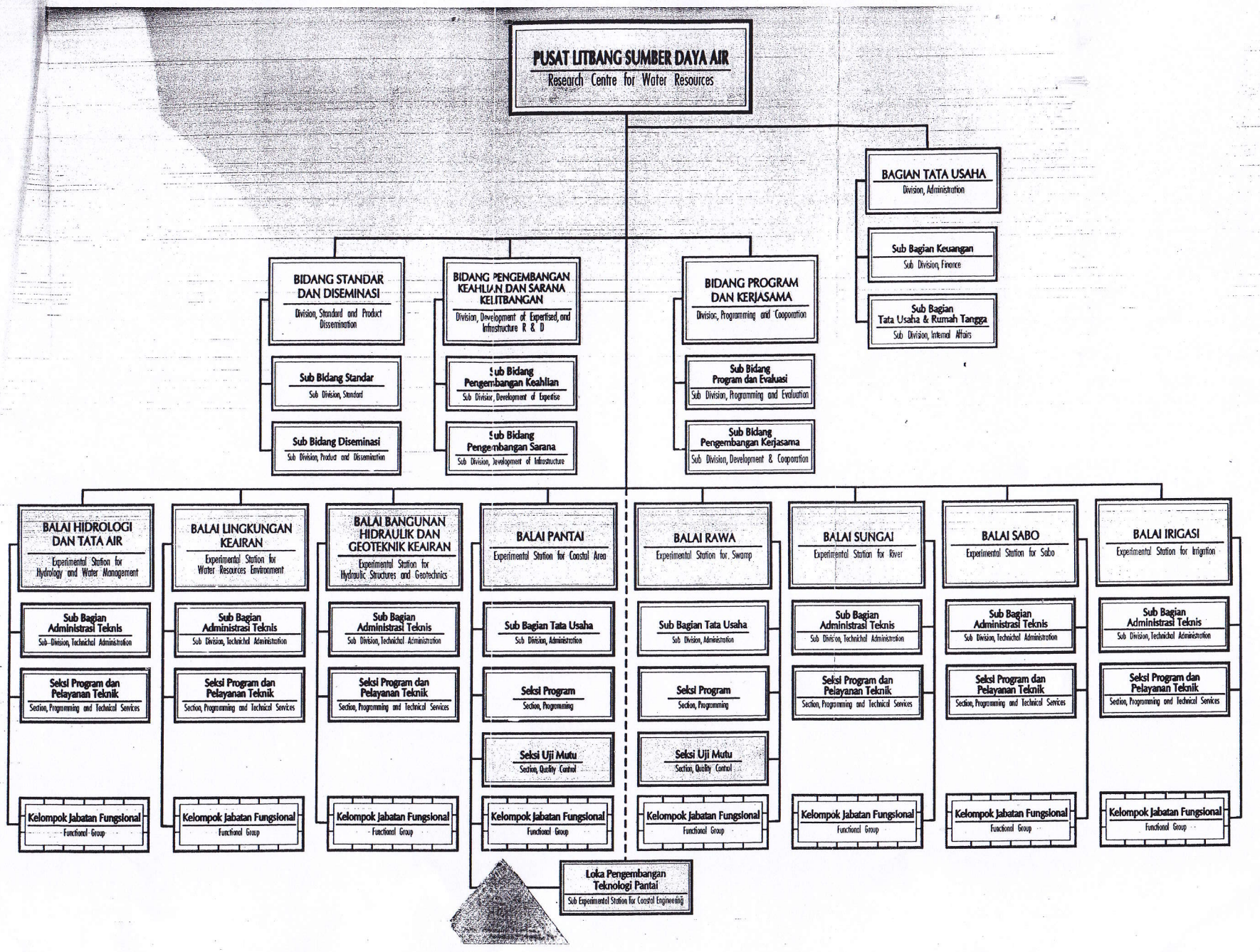
In addition to this publication, its an interactive "website" is currently being established under the domain of the RCWR. The research activities could be easily accessed by internet through : www.pusair-pu.go.id

Special thanks are addressed to all parties that have been involved in the preparation of this booklet. All comments, suggestions, recommendations as well as constructive criticism contributed for the improvement of this booklet will be highly appreciated.

Kepala
Pusat Penelitian dan Pengembangan Sumber Daya Air
Research Centre for Water Resources
Director

Arie Setiadi Moerwanto


MENTERI PEKERJAAN UMUM
MINISTER of PUBLIC WORKS
STAF AHLI MENTERI
MINISTER EXPERT STAFF
BADAN PENELITIAN DAN PENGEMBANGAN
RESEARCH AND DEVELOPMENT AGENCY
Sekretariat Badan Penelitian dan Pengembangan
Secretariat of Agency
Pusat Penelitian dan Pengembangan Sumber Daya Air
Center for Research & Development - Water Resources
Pusat Penelitian dan Pengembangan Jalan & Jembatan
Center for Research & Development - Road & Bridge
Pusat Penelitian dan Pengembangan Permukiman
Center for Research & Development - Human Settlement
Pusat Litbang Sosial, Ekonomi Budaya dan Peran Masyarakat
Center for Research & Development - Social, Culture, Economic & Community ParticipationHuman Settlement
BADAN PEMBINAAN KONSTRUKSI & SDM
CONSTRUCTION & HUMAN RESOURCES AGENCY
Pusat Pembinaan Usaha Konstruksi
Secretariat of Agency
Pusat Pembinaan Penyelenggaraan Konstruksi
Center for Construction Business Development
Pusat Pembinaan Keahlian dan Teknik Konstruksi
Center for Construction Provision Development
Pusat Kompetensi dan Pelatihan Konstruksi
Center for Competence & Construction Technique Development
SEKRETARIAT JENDERAL
SECRETARIAT GENERAL
Biro Perencanaan dan Kerjasama Luar Negeri
Bureau of planning & Overseas Cooperation
Biro Keuangan
Bureau of Finance
Biro Kepegawaian dan Ortala
Bureau of Personal, Organization & Procedures
Biro Hukum
Bureau of Legal Affaers
Biro Perlengkapan dan Umum
Bureau of Logistic & General Affair
Pusat Pendidikan & Latihan
Center for Education & Training
Pusat Komunikasi Publik
Center for Public Communication
Pusat Kajian Strategis
Center for Strategy Studies
Pusat Pengolahan Data
Center for Data Processing
INSPEKTORAT JENDERAL
INSPECTORATE GENERAL
Sekretariat Inspektorat Jenderal
Secretariat Inspectorat General
Inspektorat Wilayah I
Inspector Region I
Inspektorat Wilayah II
Inspector Region II
Inspektorat Wilayah III
Inspector Region III
Inspektorat Wilayah IV
Inspector Region IV
DIREKTORAT JENDERAL PENATAAN RUANG
DIRECTORATE GENERAL OF SPATIAL PLANNING
Secretariat Dit. Jet. Penataan Ruang
Secretariat Directorate General Spatial Planning
Direktorat Penataan Ruang Nasional
Directorate National Spatial Planning
Direktorat Penataan Ruang Wilayah I
Directorate Spatial Planning Region I
Direktorat Penataan Ruang Wilayah II
Directorate Spatial Planning Region II
Direktorat Penataan Ruang Wilayah III
Directorate Spatial Planning Region III
Direktorat Penataan Ruang Wilayah IV
Directorate Spatial Planning Region IV
DIREKTORAT JENDERAL SUMBER DAYA AIR
DIRECTORATE GENERAL OF WATER RESOURCES
Sekretariat Jenderal Sumber Daya Air
Secretariat General Water Resources
Direktorat Bina Program
Directorate Planning
Direktorat Bina Pengelolaan Sumber Daya Air
Directorate Water Resources Processing Development
Direktorat Sungai, Danau dan Waduk
Directorate River, Lakes and Dams
Direktorat Irigasi
Directorate Irrigation
Direktorat Rawa Dan Pantai
Directorate Swamp & Beach
DIREKTORAT JENDERAL BINA MARGA
DIRECTORATE GENERAL ROAD DEVELOPMENT
Sekretariat Jenderal Bina Marga
Secretariat General Road Development
Direktorat Bina Program
Directorat Planning
Direktorat Bina Teknik
Directorat Technical Planning
Direktorat Jalan Bebas Hambatan dan Jalan Kota
Directorate Highway & Urban Roads
Direktorat Jalan dan Jembatan Wilayah Barat
Directorate Road & Bridge West Region
Direktorat Jalan dan Jembatan Wilayah Timur
Directorate Road & Bridge East Region
DIREKTORAT JENDERAL CIPTA KARYA
DIRECTORATE GENERAL OF HUMAN SETTLEMENT
Sekretariat Jenderal Ciptakarya
Secretariat Directorate General Human Settlement
Direktorat Bina Program
Directorate Plannning
Direktorat Pengembangan Permukiman
Directorate Settlement Development
Direktorat Penataan Bangunan dan Lingkungan
Directorate Environment & Building Planning
Direktorat Pengembangan Air Minum
Directorate Drinking Water Development
Direktorat Pengembangan Penyehatan Ling.Permukiman
Directorate Settlement Enviionment Healt Development
Pejabat BPJT
BPJT Leader
Pejabat BPSPAM
BPSPAMT Leader
Kelompok Jabatan Fungsional
Functional Group


PUSAT LITBANG SUMBER DAYA AIR
Research Centre for Water Resources
BAGIAN TATA USAHA
Division, Administration
Sub Bagian Keuangan
Sub Division, Finance
Sub Bagian Tata Usaha & Rumah Tangga
Sub Division, Internal Affairs
BIDANG STANDAR DAN DISEMINASI
Division, Standard and Product Dissemination
Sub Bidang Standar
Sub Division, Standard
Sub Bidang Diseminasi
Sub Division, Product and Dissemination
BIDANG PENGEMBANGAN KEAHLIAN DAN SARANA KELITBANGAN
Division, Development of Expertised, and Infrastructure R & D
Sub Bidang Pengembangan Keahlian
Sub Division, Development of Expertise
Sub Bidang Pengembangan Sarana
Sub Division, Development of Infrastructure
BIDANG PROGRAM DAN KERJASAMA
Division, Programming and Cooperation
Sub Bidang Program dan Evaluasi
Sub Division, Programming and Evaluation
Sub Bidang Pengembangan Kerjasama
Sub Division, Development & Cooperation
BALAI HIDROLOGI DAN TATA AIR
Experimental Station for Hydrology and Water Management
Sub Bagian Administrasi Teknis
Sub-Division, Technichal Administration
Seksi Program dan Pelayanan Teknik
Section, Programming and Technical Services
Kelompok Jabatan Fungsional
Functional Group
BALAI LINGKUNGAN KEAIRAN
Experimental Station for Water Resources Environment
Sub Bagian Administrasi Teknis
Sub Division, Technichal Administration
Seksi Program dan Pelayanan Teknik
Section, Programming and Technical Services
Kelompok Jabatan Fungsional
Functional Group
BALAI BANGUNAN HIDRAULIK DAN GEOTEKNIK KEAIRAN
Experimental Station for Hydraulic Structures and Geotechnics
Sub Bagian Administrasi Teknis
Sub Division, Technichal Administration
Seksi Program dan Pelayanan Teknik
Section, Programming and Technical Services
Kelompok Jabatan Fungsional
Functional Group
BALAI PANTAI
Experimental Station for Coastal Area
Sub Bagian Tata Usaha
Sub Division, Administration
Seksi Program
Section, Programming
Seksi Uji Mutu
Section, Quality Control
Kelompok Jabatan Fungsional
Functional Group
Loka Pengembangan Teknologi Pantai
Sub Experimental Station for Coastal Engineering
BALAI RAWA
Experimental Station for Swamp
Sub Bagian Tata Usaha
Sub Division, Administration
Seksi Program
Section, Programming
Seksi Uji Mutu
Section, Quality Control
Kelompok Jabatan Fungsional
Functional Group
BALAI SUNGAI
Experimental Station for River
Sub Bagian Administrasi Teknis
Sub Division, Technichal Administration
Seksi Program dan Pelayanan Teknik
Section, Programming and Technical Services
Kelompok Jabatan Fungsional
Functional Group
BALAI SABO
Experimental Station for Sabo
Sub Bagian Administrasi Teknis
Sub Division, Technichal Administration
Seksi Program dan Pelayanan Teknik
Section, Programming and Technical Services
Kelompok Jabatan Fungsional
Functional Group
BALAI IRIGASI
Experimental Station for Irrigation
Sub Bagian Administrasi Teknis
Sub Division, Technichal Administration
Seksi Program dan Pelayanan Teknik
Section, Programming and Technical Services
Kelompok Jabatan Fungsional
Functional Group

Address : Jl. Ir. H. Juanda No. 193, Bandung (40135),
Phone : (022) 2501554, 2500507, 2504053;
Fax. : (022) 2500163
E_mail : b_hidrologi@pusair-pu.go.id

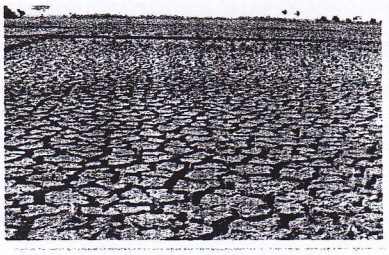
The Experimental Station for Hydrology and Water Management fulfil the function of executing research and development, experimental activities, surveys, technical advices, studies and experimentation on hydrology and national scaled technical advice on hydrological data.

The Experimental Station is equipped with laboratory for calibration of current meter and climate, measurement equipments, workshop and data processing studio, telemetry, training fasilities. Activities are strengthened by software for supporting hydrological studies.

Scope of research and development include study on : Flood and drought, flood warning system, erosion, sedimentation, rainfall-runoff relationship, groundwater, instrumentation of hydrology and climate, and water management. These engineering and technological innovations intend to support water allocation, water supply, the development and management of water resources, river control, construction of weirs and dams, disaster mitigation and the compilation of norms, standards, guidelines and manuals on hydrology.



Preparation for rain seeding



Drought caused by dry season



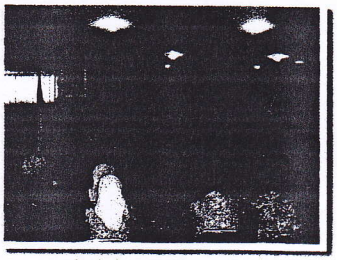
Urban flooding problem in Semarang



Research activity in groundwater

◉ Scientific Forum

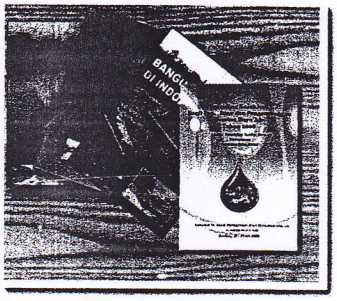
Scientific forum is conducted in the form of seminars, symposiums, and panel discussions, workshops, etc. Joint operation with other scientific institutes, professional organizations, government agencies, and the private sectors, national or international, the implementation of scientific forum is considered instrumental for augmenting the effectiveness and broadening the span of control in the dissemination of research and development activities products.



"Senior High School Interactive Dialog of Bandung area"

◉ Scientific Publications

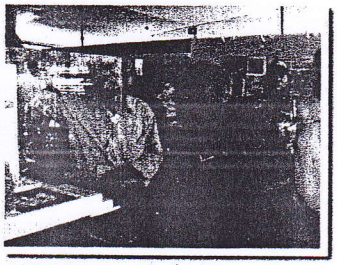
Publication of research and development journals on water resources development and management as well as the Bulletin of the Research Centre for Water Resources are amongst the underlying scientific publication medium provided by the RCWR to accommodate the scientific papers of the researchers and experts on water resources. Scientific papers from other sources addressing the water resources development and management aspects are also accommodated in an attempt to sustain the publications.



Publication of research & development

◉ Exhibitions

Exhibition events are conducted regularly for promoting the scope of works and research activities of the Research Centre for Water Resources introducing the technologies and research and development products. These exhibitions are undertaken through a close collaboration with other scientific forums associated with water resources either by the government, private sectors, corporate agencies, or other professional organizations.

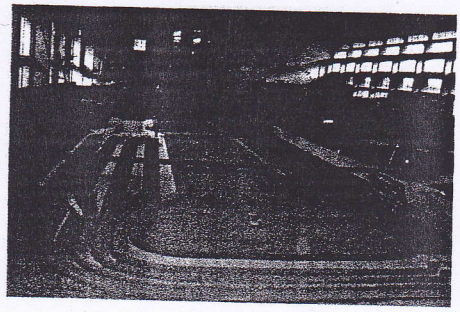


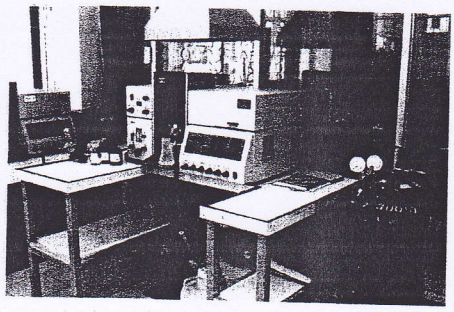
RCWR participation in "The 15th world Water Exibition 2007"

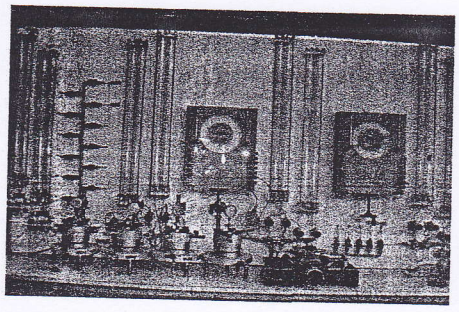
◉ Website

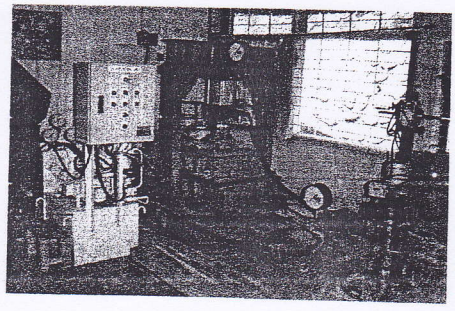
Information System of the Research Centre for Water Resources represent development of the data communication system and setting up of www.pusair-pu.go.id able to be accessed online which contain information among others on:

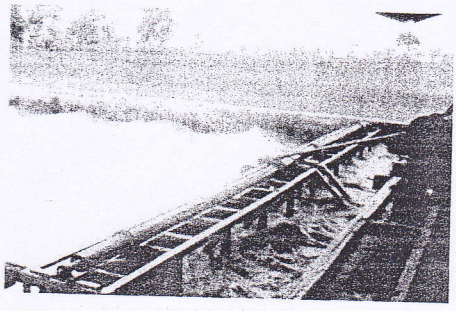
- ✶ Company profile of the RCWR, products of research and development activities, information on publication of bulletin, journal, NSGM (Norms, Standards, Guidelines and Manuals) and updated information on water resources .
- ✶ Website of experimental stations can be connected directly using each website address.

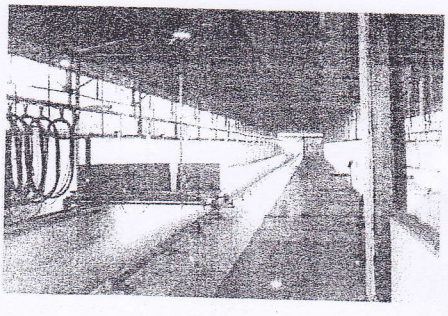


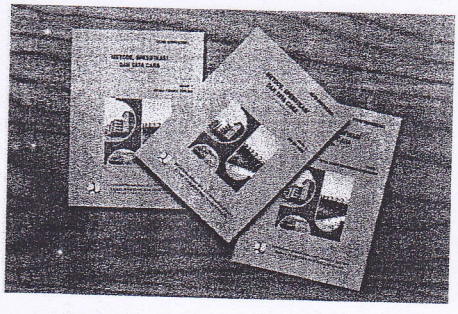


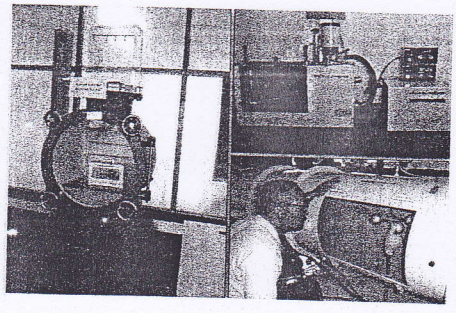




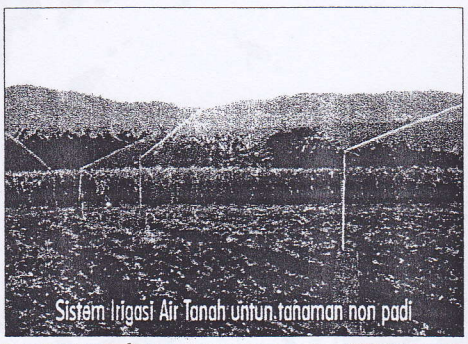


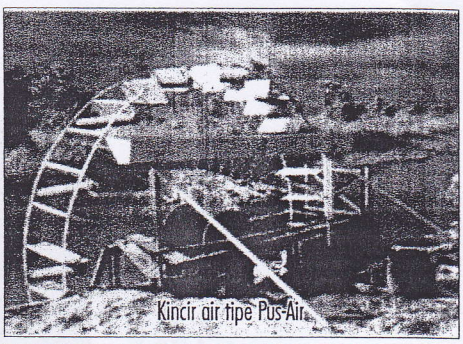


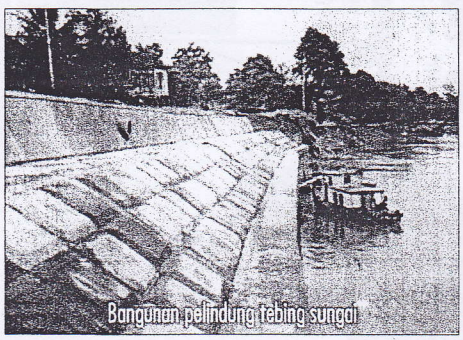




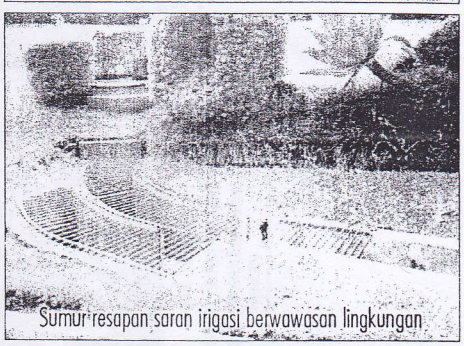

Pintu air otomatis tahan korosi


Sistem Irigasi Air Tanah untuk tanaman non padi


Kincir air tipe Pus-Air


Bangunan pelindung tebing sungai

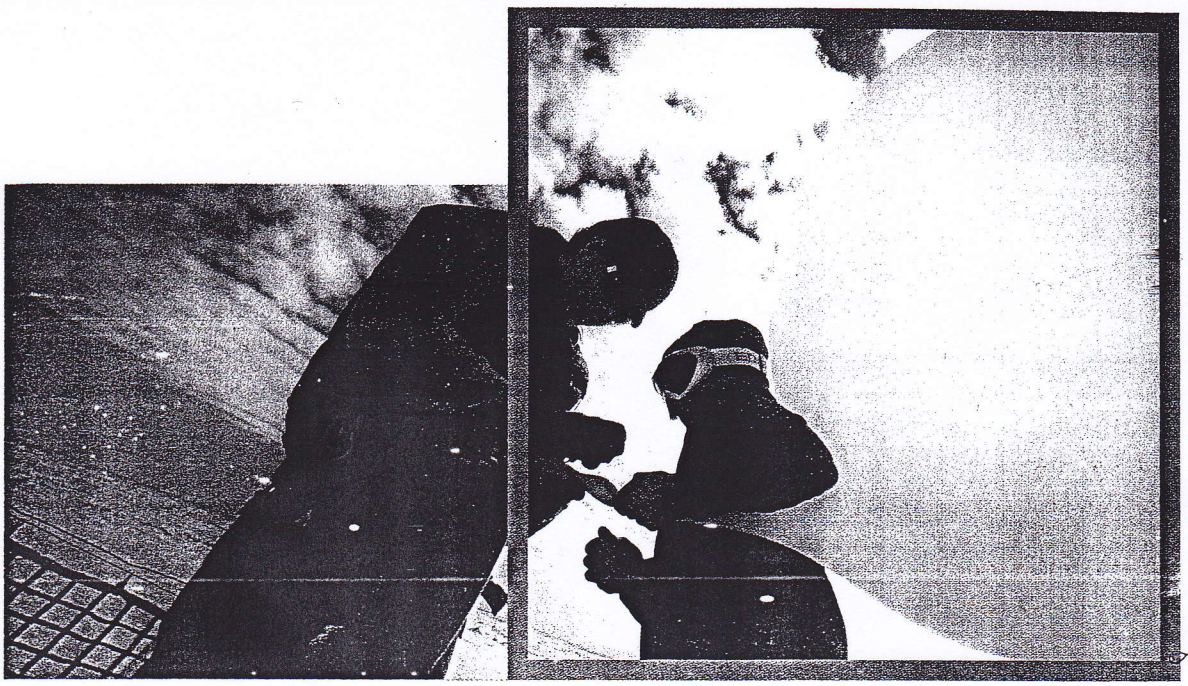

Instalasi Pengolahan air sangat sederhana


Sumur resapan saran irigasi berwawasan lingkungan


Bangunan pengendali aliran sedimen (Sabo)


Bangunan pelindung pantai





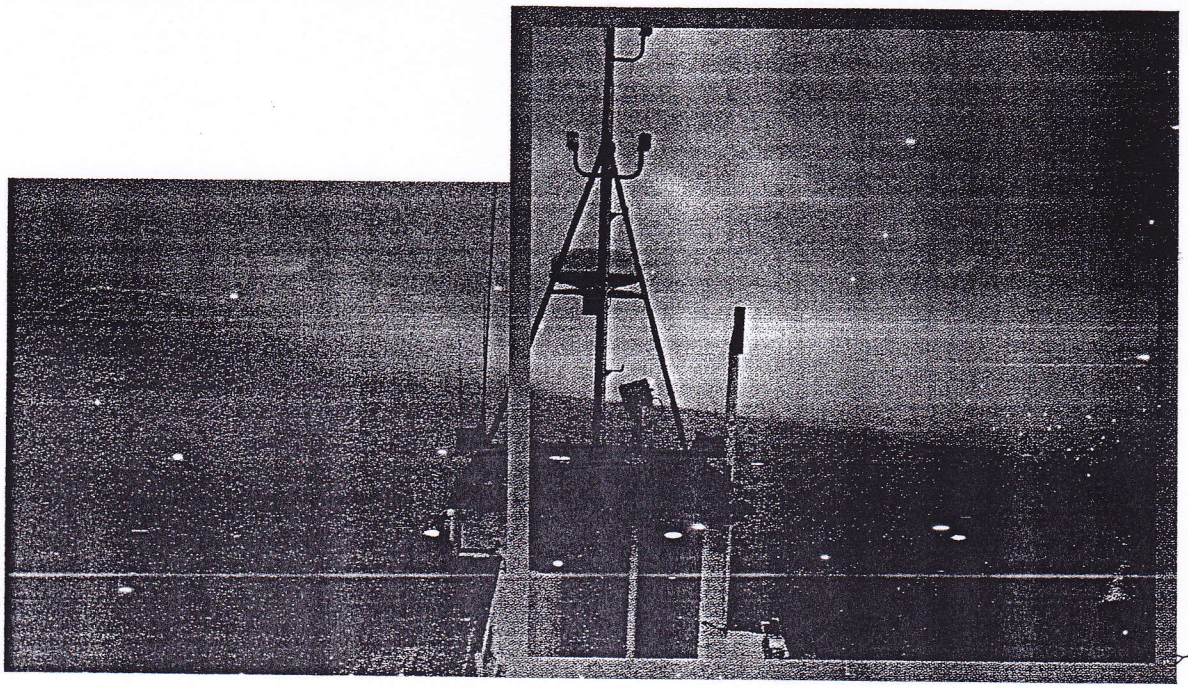
INTRODUCTION

The World Meteorological Organization (WMO), created in 1950, was established as a Specialized Agency of the United Nations in 1951 in recognition of its potential contribution to world peace and human well-being. Its predecessor, the International Meteorological Organization, a non-governmental organization of meteorological services, had demonstrated the power of meteorology and related geophysical sciences in serving human welfare and security.

In the relatively short period of 60 years, the Organization, with its robust operational system and flexible networking, has come to play an essential role in human affairs, well beyond the expectations of its founders. Throughout the years, policymakers have found in meteorology a rallying point for cooperation. As meteorology does not recognize boundaries between countries, WMO has provided a unique framework for the exchange of weather, climate and hydrological information and services across frontiers.

WMO has been highly successful in organizing international cooperation in gathering observations, conducting research and scientific analysis, and developing forecast models and improving them. The quality of numerical weather prediction for seven days is now comparable to what it was for a 24- to 36-hour forecast 60 years ago, and this was achieved through international cooperation organized by WMO. Every decade, the WMO process has added about one day to the range of practically useful forecasts. This progress has led to the huge benefits that the global community is receiving from meteorology.

The achievements of WMO over the past 60 years have been possible thanks to the Organization's promotion of free and unrestricted exchange of meteorological and related data and products, its initiatives in setting international standards for meteorological and related observations, its work on capacity-building, its promotion of science and technology, and its international leadership in the field of meteorology and the environment.



BUILDING ON A SOLID PAST

The latter half of the eighteenth century and first half of the nineteenth century were marked by major developments in meteorology at the national and international levels. In 1780, the Mannheim *Societas Meteorologica Palatina* established the first international network comprising 40 weather observing stations extending over Europe and North America.

The availability of standardized observations, though limited, led to the development of synoptic weather charts over a large area. Around 1820, based on data from *Societas Meteorologica Palatina* in Mannheim and William Redfield of New York, the insightful weather maps prepared by H.W. Brandes of Leipzig showed the rotational and progressive nature of hurricanes, as well as the patterns of wind, atmospheric pressure and weather. In 1834, the Russian Hydrometeorological Service was established.

The invention of the electric telegraph by Samuel Morse (1843) marked a new era of real-time data collection, with unprecedented progress in weather forecasting and timely dissemination of forecasts.

Subsequently, three developments set the scene for advancement of the science of meteorology: growth in international trade and maritime shipping, accompanied by a corresponding need for its security and efficiency; rapid changes in society in the 1850s, which led to increased requirements for weather information; and industrial development, which placed greater demands on science and technology, and on meteorology in particular.

To help promote safety at sea for commercial operations, Lt Matthew F. Maury convened an international conference in Brussels in August 1853. The conference firmed up international cooperation in the field of marine meteorology and laid the groundwork for development and cooperation in other fields of meteorology. The period leading up to the Brussels Conference and the following two decades saw the establishment and consolidation of several National Meteorological Services.

responsibility for assessing climate change science, its impacts and policy options. It draws on the most recent scientific, technical and socio-economic information published worldwide. Thousands of scientists from all over the world contribute voluntarily to the work of IPCC.

The IPCC First Assessment Report, published in 1990, contributed to the initiation of the United Nations Framework Convention on Climate Change. The Second Assessment Report, which was issued in 1995, alerted the global community to the possible impact of human activities on climate and led to the adoption of the Kyoto Protocol. The Third Assessment Report (2001) reaffirmed the human impact on climate change and the Fourth Assessment Report (2007) raised the urgency of action to curb greenhouse gas emissions. IPCC was awarded the Nobel Peace Prize in 2007.

World Climate Research Programme (WCRP)

WCRP was established in 1980 by WMO and the International Council for Science (ICSU), and since 1993 it has also been sponsored by the Intergovernmental Oceanographic Commission (IOC) of UNESCO. Its main objectives are to determine the predictability of climate and the effect of human activities on climate.

WCRP organizes international large-scale observational and modelling projects. Its Tropical Ocean Global Atmosphere project (1985–1994) led to the understanding of El Niño and La Niña phenomena and the operational use of this information in mitigating the impacts in extreme events, agriculture and water resource management.

Today, WCRP encompasses four major core projects: the Global Energy and Water Cycle Experiment; Climate Variability and Predictability; Stratospheric Processes and their Role in Climate; and Climate and Cryosphere. These projects and others have enabled WCRP to monitor, simulate and project global climate with unprecedented accuracy.

Global Climate Observing System (GCOS)

GCOS was established in 1992 as a joint undertaking of WMO, the Intergovernmental Oceanographic Commission of UNESCO, UNEP and the International Council for Science. It provides an operational framework for integrating and enhancing observations required for addressing the total climate system, including physical, chemical and biological properties, as well as atmospheric, oceanic, terrestrial, hydrologic and cryospheric components.

GCOS does not directly make observations or generate data and products. It builds upon, and works in partnership with, existing and developing observing systems, in particular the WMO Global Observing System and Global Atmosphere Watch, the Global Ocean Observing System, and the Global Terrestrial Observing System. It includes in situ, airborne and space-based observing components.

The Members belonging to one of the six WMO Regional Associations have committed to the operation of a Regional Basic Climatological Network (RBCN), which is an agreed selection of surface and upper-air meteorological observing stations of the Global Observing System. Worldwide, about 2 600 surface stations and 510 upper-air stations belong to the six RBCNs and the Antarctic Basic Climatological Network. They generate monthly averages of meteorological parameters measured at the surface and in vertical layers of the atmosphere up to 30 kilometres. The data are archived in and made available by the two WMO World Data Centres.

PRESERVING HUMAN HERITAGE

4 Preserving data

Weather, climate, water and environmental data, some generated for over a century, are compiled and archived nationally and internationally according to international standards and agreements established by WMO. The information is complemented by proxy and paleoclimate data and is stored in WMO World Data Centres.

IMPROVING WEATHER AND CLIMATE FORECASTS

5 Improving weather forecasts

A major achievement has been the continued improvement in weather forecasts through models that represent more accurately the physical and chemical processes that underlie the evolution of weather. Cooperative efforts have made it possible for a five-day forecast to be as reliable as a two-day forecast was 20 years ago.

6 Improving climate predictions for a season to a year

Over the past 30 years, scientific research sponsored by WMO and its partners has led to considerable improvement in understanding the climate system and in providing predictions for a season to a year ahead, accompanied by a projection of impacts. The most successful effort has been the prediction of El Niño and La Niña phenomena.

7 Predicting climate at the regional scale

While considerable progress has been made in global climate projections, climate change requires society to have reliable regional climate predictions to plan efficiently and adapt in areas such as food production, water resources, coastal protection, energy, environment and health. WMO is addressing regional-scale prediction as a priority.

8 Knowing our future climate

In 1976, WMO issued the first authoritative statement on global climate change as a result of the observed increase in greenhouse gases. Considerable progress in climate modelling, with the aid of the most powerful computers, means that it is possible to make climate projections several decades to a century ahead and to predict the potential implications for Earth systems. This has led to the recognition that humans are contributing to global climate change.

ACCESSING VITAL INFORMATION

9 Providing local access to a global network

WMO provides a unique system for the real-time exchange and availability to all nations of weather data and products, including information from satellites over its dedicated telecommunications network. These products are used in daily forecasts and warnings, and in numerous socio-economic activities and environmental monitoring. This operational system enables all nations to access information related to other hazards such as tsunamis, seismic activity and transport of radioactive or chemical pollutants.

10 Free and unrestricted exchange of data and products

A major contribution to the safety and well-being of humanity is the increasing availability of weather, climate, water and related environmental and other data and products at global and national levels. This arrangement has been at the core of real-time weather services, increasingly accurate warning systems with longer lead time, climate projections on timescales of a season to a year to a decade, climate change detection and attribution, and a wide spectrum of environmental programmes.

USING CLIMATE INFORMATION

11 Applying climate information to sustainable development

Climate information aids in planning and decision-making related to socio-economic activities, environmental protection and disaster mitigation. In particular, this information is used in the management of health, energy, urban development, water, agriculture and food security, and tourism.

WMO facilitates the development and sharing of guidance on the use of such data.

PROTECTING OUR ENVIRONMENT

12 Observing our climate

WMO systematically monitors concentrations of atmospheric gases, including carbon dioxide, methane and nitrous oxide. The First World Climate Conference, convened by WMO, led to alerts about climate change and resulted in the creation of the World Climate Programme, the World Climate Research Programme and IPCC, which was given responsibility for assessment activities. The Second World Climate Conference led to the UNFCCC and the Kyoto Protocol. WCC-3 is leading to the establishment of the Global Framework for Climate Services.

13 Timely advisories and early warnings on air quality

The World Health Organization estimates that about 2.3 million people die each year from air pollution. To address this problem, WMO Members monitor air quality by measuring oxides of sulphur, nitrogen and carbon, surface ozone, volatile organic compounds, and particulates, as well as levels of pollen and dust. These measurements are used in issuing timely warnings about the nature and concentration of pollutants that can cause asthma, other respiratory illnesses, and heart problems.

14 Preserving the ozone layer

By monitoring the protective ozone layer some 20 to 30 kilometres above the Earth's surface, since 1975 WMO has been instrumental in alerting the global community to the danger of an 'ozone hole'. As a result, the Vienna Convention on the Protection of the Ozone Layer (1985) and its Montreal Protocol on Substances that Deplete the Ozone Layer (1987) were adopted and nations have been phasing out ozone-depleting chemicals.

15 Safeguarding life from ultraviolet light exposure

As a result of the continuous monitoring of the thickness of the ozone layer by WMO, its Members are able to issue UV Index information around the globe for the protection of citizens. Ultraviolet radiation has harmful effects on human, plant and aquatic life. Prolonged exposure may cause skin cancer and cataracts and may adversely affect the human immune system.

16 Protecting from sand- and duststorms

Early warnings of sand- and duststorms are helpful in mitigating their health impacts, as well as damage to property, ecosystems, agriculture and transport. The WMO Sand and Dust Storm Warning and Assessment System is being implemented through collaborative efforts in the regions concerned.

17 Dealing with acid rain

Acid rain due to chemicals from fossil fuel burning has negative consequences for plants, freshwater fish populations and the built environment. WMO maintains a constant watch on the components that cause acid rain. In Europe, the Convention on Long-range Transboundary Pollution, initiated by WMO, has been effective in decreasing emissions of sulphur dioxide. The problem of acid deposition is increasing in the developing world.

PROVIDING ENVIRONMENTAL WARNINGS

18 Issuing volcanic ash alerts

WMO issues advisories regarding volcanic ash and its movements in the atmosphere following eruptions that spew voluminous amounts of ash. The ash poses a threat to aircraft operations and human health, and may cause a temporary drop in global temperatures.

19 Warning of the movement of oil spills at sea

In the event of oil spills, the WMO system provides warnings of their movement with projections of landfall. Suitable mitigating measures may thus be undertaken ahead of time in the threatened regions.

20 Warning of forest and wildfires

Devastating fires are often triggered by lightning or human actions, especially under dry conditions.

They may destroy not only forests, grasslands, crops and wildlife, but also settlements, and they may put human lives at risk. The WMO system monitors drought conditions and provides advance warnings of areas at risk. WMO also develops wildfire warning systems in the regions concerned.

21 Underpinning international laws on environment

A number of environmental laws, including those on the thinning of the ozone layer, transboundary transport of pollutants and the increase in greenhouse gases, were promulgated on the basis of observations made by the WMO systems. Compliance, control and further refinements of these laws require constant monitoring and the availability of authoritative data provided by WMO.

STRENGTHENING INTEGRATED WATER MANAGEMENT

22 Assessing water resources

Freshwater resources are diminishing and deteriorating under demographic and climate pressures. Knowledge of available water resources at the national level is essential for the management of domestic and industrial water use, irrigation, and hydropower generation. WMO provides for the monitoring of surface and groundwater, data exchange, and the application of data to water resources management.

23 Integrated water resources management

WMO ensures the preparation of suitable forecasts needed to plan water storage, agricultural activities, urban development, the prevention of flood-related disasters, and public health measures involving water quality. This effort contributes to an integrated, multidisciplinary approach to managing water resources.

PROTECTING THE OCEANS

24 Keeping coastal communities safe

Over half of the world's population lives near the coast. WMO advisories and warnings of tropical cyclones, high waves, storm surges and coastal flooding contribute to the safety of people living in coastal communities. In many countries, tsunami warnings are provided by NMHSs.

25 Contributing to safe ocean drilling and mining

The efficient and safe operation of offshore oil and gas installations relies on knowledge of marine forecasts of extreme weather events. Ocean mining requires similar information to ensure safety. The WMO network allows for the delivery of such information.

26 Ensuring secure pollution clean-up and search-and-rescue operations

An increase in the pollution of oceans and coastal waters has been observed recently. Sound information about the weather and the state of the sea from the WMO system is vital for safe clean-up operations. Search-and-rescue efforts also rely on the ready availability of such information.

TOWARDS A SAFER WORLD

27 Vulnerability and risk reduction

An important dimension in building risk-resilient communities is the assessment of their vulnerability and ensuring their preparedness. WMO contributes to this effort by making the relevant data on hazards available. WMO is a major pillar of the United Nations International Strategy for Disaster Reduction and the Hyogo Framework for Action 2005–2015.

28 Cyclone preparedness and damage prevention

Natural hazards of hydrometeorological origin such as tropical cyclones, droughts, floods and tornadoes are a constant threat to human security, economic development and well-being. A major contribution of WMO has been its system of early warnings as a key for preparedness and damage prevention. The WMO Tropical Cyclone Warning Centres have proved their effectiveness in significantly reducing the loss of life.

29 Early warning against drought

Drought is an insidious natural hazard that has implications for human activities and the environment. In addition, more than 250 million people are directly affected by desertification. Some 1 billion people in over 100 countries are at risk. WMO takes the lead in monitoring the phenomena through the timely collection of climatological and hydrological data and by issuing early warnings. It also actively supports the United Nations Convention to Combat Desertification (UNCCD). Several specialized regional drought monitoring centres have been established by WMO in collaboration with UNCCD.

30 Warnings of floods

Floods threaten human life and property worldwide. Some 1.5 billion people were affected by flooding in the last decade of the twentieth century. Climate change may lead to more frequent occurrences of catastrophic flooding. The WMO system allows for the prediction and monitoring of potential flood conditions and the delivery of advance warnings.

31 Warning of other hazards

Specialized centres operated by WMO provide early and timely warnings of all other weather- and climate-related hazards, such as forest fires, heatwaves and cold spells, land- and mudslides, storm surges, lightning, fog, flash floods, blizzards and avalanches.

32 Protecting from heatwaves

Heatwaves, higher maximum temperatures and an increase in the number of hot days have become common occurrences. They are associated with significant risks to health from pollution and heatstroke, which kills or affects more people than tornadoes, earthquakes or tropical cyclones. The prediction of heatwaves and their intensity and duration by WMO enables health authorities to take suitable preventive measures.

33 Providing tsunami warnings

WMO has been contributing to tsunami warnings by making its Global Telecommunications System available for the dissemination of warnings to countries likely to be affected by tsunamis. This process was facilitated by the lead role played by many of the NMHSs in issuing tsunami warnings. In other countries, NMHSs were assigned this responsibility because of their 24-hour operational capability.

CONTRIBUTING TO FOOD SECURITY

34 Providing agrometeorological services

Timely and accurate weather and climate information is critical to the agricultural community to sustain agricultural production and increase crop and livestock yields, to plan and manage planting and harvest time, and to control pests and diseases. Such information is essential for insurance against crop failure and for agricultural futures trading. WMO also helps developing countries to modernize and improve agriculture and forestry in ways that conserve natural resources and improve nutrition.

35 Contributing to sustainability of fisheries

Fish are a major source of nutrition around the world. Information on weather, including temperature, wind, and ocean waves and currents, provided through WMO, is routinely used in commercial fishing operations.

36 Early warning and control of locust swarms

Every year, desert locusts in Africa, Asia and the Middle East inflict immense damage on agriculture. Between 2003 and 2005, the damage was estimated at US$ 400 million and affected 8.4 million people. On the basis of weather information provided by WMO, such as precipitation, temperature, humidity and wind, locust swarms are controlled thanks to prior knowledge of favourable sites for breeding and the subsequent directions of their movement.

37 Soil

The health of the soil is crucial to life as it supports organisms at the bottom of the terrestrial food

chain – worms, insects, fungi and vegetation. It plays an essential role in the hydrological cycle and in the biogeochemical cycle. Deforestation, erosion, pollution and acidification are causing catastrophic damage and degradation affecting some 2 billion hectares of land. WMO monitors several of the parameters essential in maintaining healthy soils.

38 Biodiversity

Biodiversity plays a vital role in regulating the composition of the atmosphere, the hydrological cycle, and soils, as well as the pollination of crops and absorption of pollutants. WMO provides data for several of the parameters that are essential in monitoring and in reversing biodiversity loss and it supports many of the actions called for under the Convention on Biological Diversity.

39 Protecting natural resources

Natural resources are essential for meeting human needs and for human survival. Better management of these resources contributes to human security, including sustainable livelihoods, resilience to disasters, disease prevention, and conflict avoidance and peacebuilding. WMO provides information on weather, climate and environmental conditions that helps to optimize the use and protection of these resources.

PROMOTING CLEAN ENERGY

40 Using energy economically

Energy availability determines to a large extent the economic well-being of a population. Information on current and forecast weather, the climate, and water resources helps to optimize energy consumption. WMO facilitates the generation and exchange of such information, which aids in planning and meeting energy demands, in developing energy systems, and in ensuring compliance with environmental requirements.

41 Assisting in the generation of clean energy

The optimal development of renewable energy resources, such as hydropower and wind, solar and biological energy sources, requires regular and reliable information on weather, climate and water. WMO ensures that such information is readily available to all nations involved in developing renewable energy sources.

PROTECTING HEALTH

42 Protecting health

WMO provides weather and climate services in support of human health. Early warnings of disease epidemics, disaster prevention and mitigation, and air quality services contribute to the protection of public health. Malaria surveillance in Africa, heat health advisories and warnings, and the UV Index are a few of the information services available routinely to international, regional and national health partners.

ENSURING SAFE AND SECURE TRANSPORT

43 Ensuring the safety of air transport

The aviation sector requires a range of information on weather conditions, including wind and wind shear, visibility, turbulence, fog, precipitation, and icing conditions. WMO ensures the worldwide provision of cost-effective meteorological services in support of safe, regular and efficient aviation operations, as well as for the launch and landing of spacecraft.

44 Ensuring the safety of marine transport

Over 95 per cent of goods by tonnage are shipped over the oceans efficiently. Safety of such transport is assured by the provision of up-to-date information on adverse weather conditions and the state of the sea, a specialized service made possible by the WMO network of weather monitoring and dissemination systems.

45 Safety of road and rail transport

The economic well-being of a nation relies to a significant extent on the safe and economical transport of people and goods by road and rail. Weather and climate are determining factors in the efficiency and security of such transport. WMO devotes special attention to providing

suitable and timely information to all operators and users of ground transport.

46 Pipeline transport

WMO provides information about conditions in the surrounding environment, including permafrost and groundwater drainage, which is essential for the safe operation of land-based pipelines, and it also supplies information on marine conditions for underwater pipelines.

ENSURING THE SAFETY OF THE URBAN ENVIRONMENT

47 Safety of the urban environment

Half of humanity now lives in cities, and within two decades nearly 60 per cent of the world's people will be urban- dwellers. Environmental aspects are of paramount importance given this scenario. Increased incidence of pollutants, such as surface ozone, nitrous oxide, carbon monoxide and pollen, poses a growing threat. By providing timely warnings on air pollution, natural hazards and weather conditions, WMO makes it possible for suitable safety measures to be taken.

SUPPORTING LEISURE

48 Supporting leisure and tourism

Leisure and tourism are among the largest economic activities in the world, and as such they are a major source of income and employment. Tourism is the most significant element in the sustainable development of Small Island Developing States. By supporting the delivery of relevant information about weather and climate conditions, WMO actively supports the development of tourism.

CONTRIBUTING TO DEVELOPMENT

49 Promoting development

WMO has devoted considerable attention and resources to promoting security, living standards and human skills. It established a technical assistance programme in 1952 and a unique system of self-help among its Members known as the Voluntary Assistance Programme in 1967, which was renamed the Voluntary Cooperation Programme in 1979. It has been a significant source of support for maintaining many of the essential services in developing countries.

50 Focusing on African development

Since the 1960s and 1970s, when a large number of African countries became independent, WMO has paid special attention to the needs of Africa, targeting projects on the development of NMHSs and human resources. A number of regional institutions dealing with drought, water and related activities were established. The 2002 New Partnership for Africa's Development is the main framework for channelling international support to Africa.

51 Meeting the specific needs of developing countries

WMO established a special programme for the 49 Least Developed Countries in 2003. WMO also gives special attention to the vulnerable countries, such as landlocked or low-lying ones, as well as to the needs of Small Island Developing States, which are highly vulnerable to natural hazards, long-term climatic variations, impacts of sea-level rise and environmental degradation.

52 Supporting regional initiatives

WMO's six Regional Associations cater for the special needs of the regions. WMO supports regional economic organizations in the formulation and implementation of sustainable development strategies that relate to warnings against tropical cyclones, drought and other weather extremes, management of water resources, food security, and transport. It also collaborates with regional banks, research institutions and United Nations regional commissions.

53 Supporting international programmes

WMO has close working relationships with most of the agencies, funds and programmes of the United Nations System and many other international organizations, and it contributes to the formulation and implementation of the relevant initiatives and policies in the areas of weather, water, climate and related environmental issues.

SUPPORTING CAPACITY-BUILDING

54 Building capacity to cope and sharing expertise

WMO contributes to human resources development through training, provision of training materials, and fellowships. Its network of 30 Regional Training Centres, along with a network of universities and training institutions, contributes to this global effort. WMO promotes technology transfer and exchange of experts among NMHSs and institutions in related disciplines and in academia.

55 Promoting science and technology

Through its scientific and technical commissions, WMO ensures that developments in science and technology, such as sensors, computers, communication and information technology, satellites and new numerical methods, contribute to the monitoring, collection, processing and distribution of geophysical data and products for sustainable development and research activities. It also undertakes to make these accessible to developing countries as effectively as possible.

FOSTERING RESEARCH

56 Assessing the Arctic and the Antarctic

The Arctic is experiencing some of the most rapid climate change currently under way across the globe. Changes are also occurring in the Antarctic. The changes will have implications for climate the world over. WMO monitors the meteorological conditions and alerts the global community to the rapid changes. WMO and its predecessor the IMO sponsored three International Polar Years: 1882–1883, 1932–1933, and 1957–1958. In partnership with the International Council for Science, it sponsored the most recent International Polar Year 2007–2008, which contributed to major advances in polar knowledge and understanding and in assessing the implications of polar changes for the rest of the planet. This effort also left a legacy of enhanced observing systems, facilities and infrastructure.

57 Advising on weather modification

Nearly 70 countries perform various kinds of weather modification, such as rain enhancement, fog dispersal and hail suppression. In 1979, WMO undertook the first international weather modification experiment in Spain. WMO issued its authoritative Statement on Weather Modification and its Guidelines for the Planning of Weather Modification Activities. (15)

58 Improving the understanding of weather, water and climate processes and advancing their prediction

WMO organizes and supports international research that has enabled improvements in weather, climate, water and environmental observations, in the prediction of weather and seasonal and interannual climate variations (such as droughts and El Niño), and in climate change predictions. WMO research also supports scientific assessments of regional and global environmental conditions and relevant international environmental conventions.

PLANNING FOR THE FUTURE

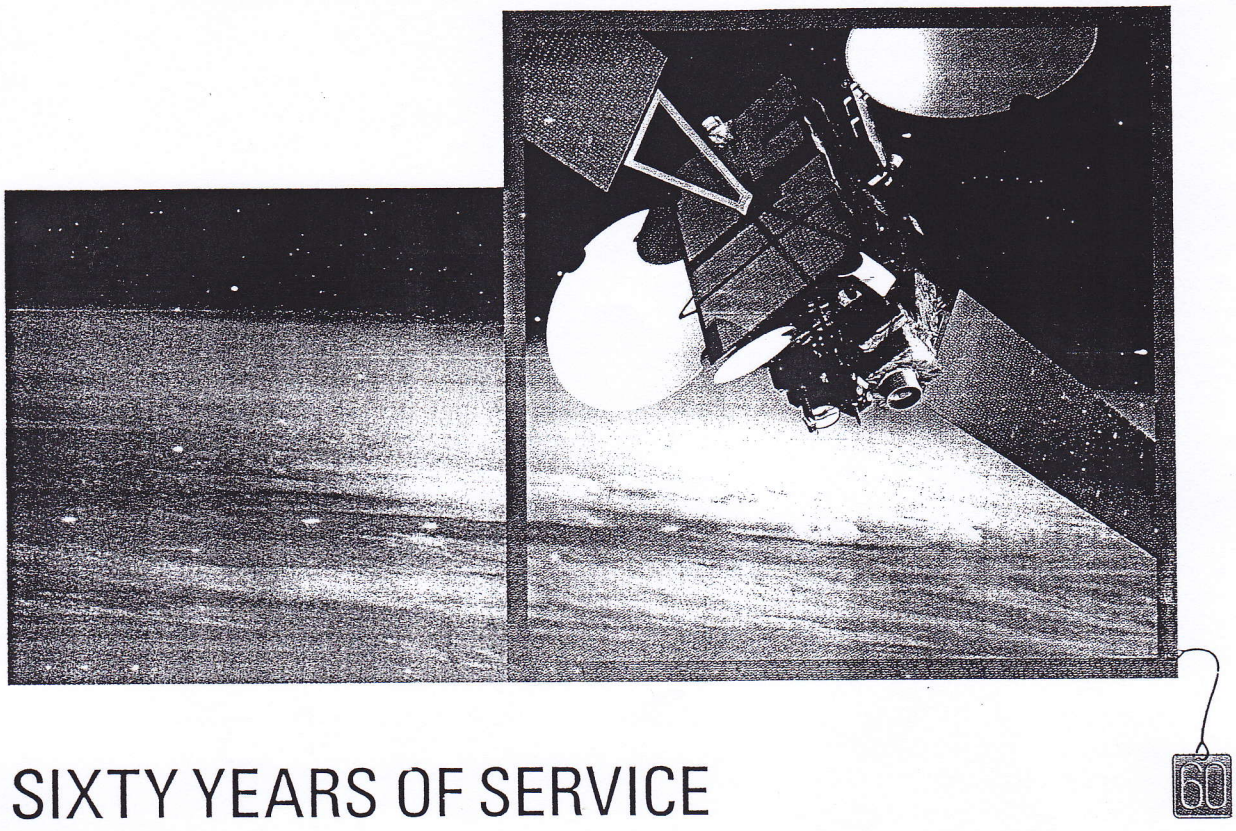
59 Supporting economic and financial services

The insurance sector takes into account climate change scenarios in risk assessment. Financial and development institutions need the weather, climate and water data provided by WMO, as well as short- and long-term projections, when investing in infrastructure-building.

60 Long-term strategic planning

In 1981 WMO formally introduced a long-term planning process based on those of national services and developed through its regional bodies and scientific and technical commissions. The plans enable not only the Organization but also the NMHSs to chart their future course in the light of evolving national requirements and regional and international commitments for weather, water, climate and environmental information. The new Strategic Plan recognizes the importance of results-based management for focusing WMO activities on issues with major societal benefits.





SIXTY YEARS OF SERVICE

The formative years (1950–1963)

The early years were marked by efforts to achieve uniformity of meteorological practices with the publication of technical regulations and the development of guides. For the first time, detailed specifications for national and regional climate atlases were drawn up.

The International Geophysical Year (1957–1958), initiated by the International Council of Scientific Unions (ICSU), now the International Council for Science, was a major landmark for international research collaboration on 11 disciplines in the earth sciences. WMO took the responsibility of developing and implementing the meteorology component of this global research programme, forming the foundation for the Organization's leadership role, and for its tradition of international cooperation and working with non-governmental organizations.

WMO has supported the National Meteorological and Hydrological Services of a growing number of new Members through an active technical assistance programme. Expansion of weather-sensitive activities (such as transportation, energy production and tourism) and the continuous need for improved accuracy of forecasts has prompted an increase in observations at surface and upper levels of the atmosphere. By 1963, more than 3 000 ships were providing observations from the oceans. The advent of radio-teletypewriter, facsimile and other radio transmission stations facilitated the availability of real-time data and the preparation and dissemination of weather maps.

The technological revolution (1964–1970)

Undoubtedly, the most significant development was the World Weather Watch Programme, a concept mentioned by the United Nations in its resolution on the peaceful use of space. The resulting system was unique in its establishment of the Global Observing System (GOS), as well as the Global Data-processing and Forecasting System and Global Telecommunication System, which were made possible by the advances in remote-sensing, satellites, communications and computers.

impacts and applications. The 1985 Villach Conference assessment of the role of carbon dioxide and other greenhouse gases in climate variations provided the first universally accepted statement on the most likely magnitude of global warming and its consequences.

WMO action led to the establishment of the 1985 Vienna Convention on the Protection of the Ozone Layer and the 1987 Montreal Protocol on substances that deplete the ozone layer. As a result, science-based policy has contributed to the phasing out of ozone-depleting substances, with a return to normality projected over the coming 50-year period.

Natural disasters and sustainable development (1991–2000)

The recurrence of extreme weather events, such as the 1982–1983 El Niño-related disasters, and concern about the continued degradation of the environment gave rise to three major developments during the decade: the 1992 International Conference on Water and Environment; the 1992 United Nations Conference on Environment and Development; and the 1990–1999 United Nations International Decade for Natural Disaster Reduction.

The period also saw the entry into force of the United Nations Framework Convention on Climate Change (UNFCCC) and its 1997 Kyoto Protocol, as well as the United Nations Convention to Combat Desertification in 1994 and the Convention on Biological Diversity in 1993.

The Intergovernmental Panel on Climate Change issued its groundbreaking First and Second Assessment Reports in 1990 and 1995. The latter report concluded that the "balance of evidence suggests a discernible human influence on global climate".

Climate change (2001–2010)

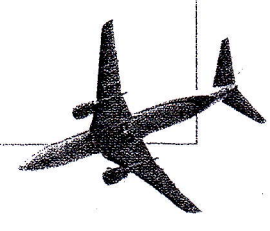
The WMO authoritative statement in 1976 on the impact of the observed greenhouse gas increase on climate is a milestone in history. It marked the beginning of climate protection activities. It was the steady perseverance of climate scientists, supported by the activities of WMO and other partners, that ultimately brought climate change to the forefront of the global agenda.

The turn of the century has been dominated by the overriding concern about climate change. The 2001 IPCC Third Assessment Report concluded: "there is now stronger evidence for a human influence on the global climate". The initial scepticism gave rise to genuine concern for the Earth's climate and life as it is known today. The 2007 Fourth Assessment Report states that "warming of the climate system is unequivocal" and that "most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

Successful cooperation with airlines

Since the early days of WMO, collaboration with civil aviation has been mutually beneficial to the Organization and the industry. The need for weather services for aviation triggered the establishment of a considerable number of National Meteorological Services. Improved capability in monitoring and predicting weather conditions, especially those hazardous to aeronautical operations, contributes to the safe and efficient operation of aircraft.

An important area of cooperation has been the Aircraft Meteorological Data Relay (AMDAR), in which aircraft collect meteorological data, such as air pressure, temperature and wind, and transmit this information to the WMO network. Between 2004 and 2008, AMDAR reports increased from 139 000 to 260 000 per year.



Appendice 1: Total Corpuses Based on the Booklet

No.	Page	Source Language	Page	Target Language
1.	WMO: p.12	greenhouse	BMD: p. 10	rumah kaca.
2.	WMO: p. 7	framework	BMD: p. 4	kerangka pemikiran
3.	WMO: p.8	groundwork	BMD: p. 5	dasar
4.	WMO: p. 12	Worldwide	BMD: p. 10	seluruh dunia.
5.	WMO: p. 12	airborne	BMD: p. 10	diangkut melalui udara
6.	WMO: p. II	timescales	BMD: p. III	rentang Waktu
7.	WMO: p. III	Freshwater	BMD: p. IV	Air tawar
8.	WMO: p. III	Aircraft	BMD: p. IV	Pesawat terbang
9.	WMO: p. IV	Wildlife	BMD: p. V	Satwa liar
10.	WMO: p. V	Heatwave	BMD: p. VII	Gelombang panas
11.	WMO: p. V	Earthquake	BMD: p. VII	Gempa bumi
12.	WMO: p. VI	Spacecraft	BMD: p. IX	Kendaraan angkasa
13.	WMO: p. VII	Pipeline	BMD: p. IX	Pipa saluran
14.	WMO: p. VII	Landlocked	BMD: p. IX	Didalam tanah
15.	WMO: p. VIII	Guideline	BMD: p. IX	Pedoman
16.	WMO: p. 13	Landmark	BMD: p. 12	Penunjuk
17.	WMO: p.16	Milestone	BMD: p. 16	Sejarah utama

Appendice 2: Classified Corpuses

No.	Compound Words		Non-Compound Words	
	Source Language	Target Language	Source Language	Target Language
1.	greenhouse	rumah kaca.	Green + House	Rumah bercat hijau
2.	framework	kerangka pemikiran	Frame + Work	Bingkai kerja
3.	groundwork	dasar	Ground + Work	Kerja dibawah tanah
4.	Worldwide	seluruh dunia.	World + Wide	Dunia luas
5.	airborne	diangkut melalui udara	Air + Borne	Memikul udara
6.	timescales	rentang Waktu	Time +Scales	Skala waktu
7.	Freshwater	aurtawar	Fresh +Water	Air tawar
8.	Aircraft	Pesawat terbang	Air + Craft	Keahlian di udara
9.	Wildlife	Satwa liar	Wild +Life	Kehidupan liar
1.	Heatwave	Gelombang panas	Heat + Wave	Gelombang yang panas
11.	Earthquake	Gempa bumi	Earth + Quake	Gempa Bumi
12.	Spacecraft	Kendaraan angkasa	Space + Craft	Keahlian di angkasa

13.	Pipeline	Pipa saluran	Pipe + Line	Garis pipa
14.	Landlocked	Didalam tanah	Land + Lock	Pulau terkunci
15.	Guideline	Pedoman	Guide + Line	Pemandu garis
16.	Landmark	Penunjuk	Land + Mark	Tanda pulau
17.	Milestone	Sejarah utama	Mile +Stone	Mil batu