LEGISLATIVE ASSEMBLY
1999-2000-2001

SELECT COMMITTEE ON SALINITY

REPORT ON STUDY TOUR TO

INDIA, COPENHAGEN, NETHERLANDS AND BRUSSELS

4 – 21 June 2001

November 2001

Report No. 4

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New South Wales Parliamentary Library cataloguing-in-publication data:

New South Wales. Parliament. Legislative Assembly. Select Committee on Salinity

Report On Study Tour To India, Copenhagen, Netherlands And Brussels 4 – 21 June 2001 / Select Committee on Salinity. [Sydney, N.S.W.] :The Committee, 2001. 77p. ; 30 cm. (Report ; no.4)

"November 2001".

ISBN

1. Salinity—Australia.
2. Report On Study Tour To India, Copenhagen, Netherlands And Brussels 4 – 21 June 2001 (December 2001)

I Title.

II Series: New South Wales. Parliament. Legislative Assembly. Select Committee on Salinity. Report; no. 4

DDC 631.416

TABLE OF CONTENTS

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TERMS OF REFERENCE

A select committee has been appointed to inquire and report with the following terms of reference:

To examine:

(a) Business opportunities created by salinity that contribute to the improved management of groundwater recharge and discharge areas.

(b) The options for salinity management that are available to local councils, including but not limited to, planning instruments, building codes, urban water management plans, differential rating, development of local council expertise and resource-sharing between councils.

(c) Any barriers to adoption of salinity management strategies by local councils, and means to overcome the barriers.

(d) The adequacy of the Commonwealth's response and contribution to addressing salinity.

CHAIRMAN'S FOREWORD

This report provides the public record of the overseas study tour undertaken during June 2001 by me, Don Page MP and Leslie Gönye, the Committee Manager, as a delegation of the Select Committee on Salinity.

The delegation met with a number of officials of both government and non government organisations and conducted wide ranging discussions and inspections across the specific issue of salinity and related general principles and trends in natural resource management, including agriculture. The delegation found all the discussions thought provoking and stimulating particularly those held with officials of non government organisations.

It is clear that there is no single solution to the problems of salinity. Rather it is a combination of the relationships between water management, sustainable farming and development, environment needs, economics, engineering, planning, education, problem sharing and inclusiveness of key stakeholders. It is a matter of getting the right balance in the use of the technical, economic, legislative/regulatory, administrative and analytical tools in respect to the nature and extent of the problem in the various locations and regions.

One direct outcome of the visit will be the proposed hosting, by the committee, of a seminar on salinity in the first half of 2002 to which stakeholders will be invited to explore innovative approaches in tackling salinity.

The delegation also took the opportunity to visit a number of parliaments in most of the jurisdictions on our itinerary as well as obtaining briefings at the Australian missions in the countries visited.

Finally I would like to extend my sincere thanks to the officials of the various bodies we met for their time in meeting with the delegation to discuss their experiences and share their expertise with us. I also place on the record, my thanks to the officials of the Department of Foreign Affairs and Trade for assisting with arrangements for many of the meetings and their hospitality in receiving us at the various missions.

The Hon Pam Allan, MP
Chairman

1 AUSTRALIAN HIGH COMMISSION – NEW DELHI

PARTICIPANTS

1.1 Mr Bryce Hutchesson, Deputy High Commissioner; Ms Julie Anne Guivarra, Second Secretary; and Mr Peter Forby, Trade Commissioner.

BRIEFINGS

♦ Bilateral Relationship

1.2 Mr Hutchesson briefed the delegation on the bilateral relationship between India and Australia. The relationship is in better shape than ever as reflected by the pattern of high level visits (Minister Downer in March 2000 and Prime Minister Howard in July 2000). The traditional aspects of the relationship – cricket and British Commonwealth can not be overstated.

♦ Political Situation

1.3 Ms Guiverra briefed the delegation on the current national political situation. The Union (National) Government consists of a 20 party alliance. There are two ideological groupings: BJP (Government) and Congress (Opposition). Around them are the myriad of smaller regional and issues based parties which have risen over the last 20 years. This reflects the enormous diversity of India. This in turn manifests itself as a problem in terms of stability of government. The current big issues are privatisation and reform policy, particularly in regard to Air India and power supply (India is chronically power deficient, there is power theft and supplies to the rural sector are heavily subsidised).

♦ Trade and Constitution

1.4 Mr Forby briefed the delegation on trade and aspects of India's constitution.

1.5 In the last two years, India has lifted the bans on 1,500 items which previously could not be imported into India. Though some tariffs remain, the country is opening up to WTO standards. This has expanded the opportunities for trade and investment in technology and value adding industries to come from Australia into India. The value of trade is AU$2.5B will the balance in Australia's favour two to one.

1.6 Under India's constitution the States are heavily dependent on the Union Government for funding. The States tax sales, food and luxury items and now have the power to borrow money. The States can not fund their own projects and seek investment for the private sector to build, own, operate and transfer. India's Constitution is similar to Australia's in terms of land use provisions being a state responsibility. There are also opportunities for Australian investment in regard to water, waste, forestry and land management.

2 SOUTH ASIA AUSTRALIAN CENTRE FOR INTERNATIONAL AGRICULTURAL RESEARCH

PARTICIPANT

2.1 Dr Kuhu Chatterjee, Assistant Country Manager, South Asia Australian Centre for International Agricultural Research [ACIAR].

BRIEFING

2.2 Dr Chatterjee briefed the delegation on the ACIAR and on aspects of the salinity problem in India.

♦ Australian Centre for International Agricultural Research

2.3 ACIAR is a statutory authority established by the *Australian Centre for International Agricultural Research Act 1982*. Its establishment reflected the view that Australia could make a special contribution to development through sharing its agricultural research expertise.

2.4 ACIAR's mandate directs it to mobilise Australia's research capacity to help solve agricultural research problems of developing countries. Thus the Centre allocates about three-quarters of its research and development budget to promoting bilateral development related research collaboration between Australia and individual developing countries. The remaining quarter is Australia's contribution to the institutes of the international agricultural research system.

2.5 ACIAR itself does not carry out research, but brings together research institutions in Australia and partner developing countries to work together on problems of mutual interest and benefit, in fields in which Australia has comparative advantage. ACIAR projects are implemented through contractual arrangements with such Australian organizations as State agricultural departments, universities, CSIRO and the cooperative research centres. The rural industry research and development corporation and private industry may also be involved.

2.6 ACIAR's Research Program Managers oversee the development and implementation of projects within individual program areas, then monitor and review research progress. Their work is augmented by the Centre's Economic Evaluation Unit, which assesses the economic implications and impact of proposed and completed research.

♦ ACIAR and projects related to Salinity Management in South Asia

2.7 ACIAR spent approximately 18% of its bilateral program budget in South Asia during the year 2000/2001 which is about AU$4.2 million. The Indian component is at AU$3.1 million. There are 34 active projects in South Asia out of which 19 are in India and the rest spread uniformly over Pakistan, Sri Lanka, Bangladesh, Nepal and Bhutan.

2.8 The South Asia branch of ACIAR is located at the Australian High Commission, New Delhi.

2.9 Projects related to salinity in South Asia are:

- Project CS1/96/025: Physiological and Genetic Approaches for development of Waterlogging Tolerance in Wheat on Sodic/Alkaline and Neutral Soils in India and Australia: The project aims to produce breeding lines for wheat for Australia and India that are tolerant of waterlogging in the main soil types in which this occurs in the two countries.

- Project LWR2/1998/131: Permanent Raised Beds to Improve Productivity and Control Salinity in Pakistan: This project aims to improve soil conditions and productivity by developing practical and economic management of water and soil. In an earlier ACIAR project permanent raised-bed technology, developed for irrigation agriculture, was adapted to improve yields and prevent waterlogging in fragile soils in WA. Scientists are now assessing the potential of this technology to rehabilitate waterlogged, salt affected land in Pakistan, increase crop productivity and improve irrigation efficiency. A benefit to WA would be increased monitoring of permanent raised-bed experimentation.

2.10 In addition there are a few other projects that are being currently developed:

- Project LWR2/2000/089: Permanent Raised Bed Culture for sustainable rise-wheat systems in India and Australia.

- Project LWR1/2000/013: Integrated on farm management of saline drainage effluent.

♦ Salinity in India

2.11 Dr Chatterjee advised that in India the extent of salt affected areas as reported by different sources varies from 7 million hectares to 26.1 million hectares. The National Bureau of Soil Survey and Land Use Planning reports the figure to be at 10 million hectares. The problems of soil salinity and waterlogging is dominant in the irrigated areas of the arid and the semi-arid regions of India. The total irrigated area in India is approximately 44.8 million hectares out of which 7 million hectares is affected by salinity. Punjab, Haryana and Rajasthan are the worst effected states. However, saline soils are found inland as well as in coastal parts of India.

2.12 In large parts of North India, the states of Punjab, Haryana and western Uttar Pradesh, there is also the problem of sodic or alkaline soils caused by the build up of soluble bicarbonates in soil due to over irrigation, waterlogged soils and poor subsurface drainage.

2.13 The ministries of Rural Development and Agriculture are key agencies. The Union Government grants money to State Governments for major reclamation works. Dr Chatterjee also made the point that large numbers of the public feel disempowered as they believe decisions are being made by the “big players” (in the public service).

3 MINISTRY OF WATER RESOURCES – INDIA

PARTICIPANTS

3.1 Shar B N Nawalawala, Secretary for the Ministry of Water Resources and 12 other staff of agencies under the ministry.

3.2 Also in attendance: Mr Bryce Hutchesson, Australian Deputy High Commissioner.

MEETING AND DISCUSSION

♦ **Functions of Ministry of Water Resources**

3.3 The delegation was advised that under the *Government of India Act 1919*, irrigation became a state subject and the responsibility of the Government of India was confined to advice, coordination and settlement of disputes over rights to waters of interstate rivers.

3.4 The Ministry of Water Resources is responsible for laying down policy guidelines and programs for the development and regulation of the country's water resources. The ministry has been allocated the following functions through which it is involved in programs related to saline soils:

- overall planning, policy formation, coordination and guidance in the water resources sector;
- technical guidance, scrutiny, clearance and monitoring of irrigation, flood control and multi-purpose medium to major projects;
- general infrastructural, technical and research support for sectoral development;
- providing special financial assistance for specific projects and assistance in obtaining external finance from the World Bank and other agencies;
- overall policy formulation, planning and guidance in respect of minor irrigation and command area development, administration and monitoring of the centrally sponsored schemes and promotion of participatory irrigation management;
- overall planning for the development of ground water resources, establishment of usable resources and formulation of polices of exploitation, overseeing of and support to State level activities in ground water development;
- formulation of a national water development perspective and the determination of the water balance of different basins/sub-basins for consideration of possibile of inter-basin transfers;
- coordination, mediation and facilitation in regard to the resolution of differences or disputes relating to interstate rivers and in some instances, the overseeing of the implementation of interstate projects; and

- operation of the central network for flood forecasting.

♦ Water Quality Issues

3.5 Contamination can enter the water bodies (rivers and groundwater) through one or more of the following ways:

- direct point sources – transfer of pollutants from municipal industrial liquid waste disposal sites and from municipal and household hazardous waste and refuse disposal sites;
- diffuse agricultural sources – wash off and soil erosion from agricultural lands carrying materials applied during agricultural use, mainly fertilisers, herbicides and pesticides; and
- diffuse urban sources – run off from city streets, from horticultural, gardening and commercial activities in the urban environment and from industrial sites and storage areas.

♦ Rivers

3.6 As in Australia, the water quality of rivers in India can be effected by: change in physical characteristics; contamination by faecal and organic matter; toxic pollutants (including heavy metals); eurtrophication (nutrient enrichment); changes in river hydrology; and salinisation.

3.7 Increased mineral salts in rivers may arise from several sources:

- pollution by mining waste waters;
- pollution by certain industrial waste waters; and
- increased evaporation in the river basin (mainly in arid and semiarid regions).

3.8 Industrial and mining waste pollution results in an increase in volumes, whilst evaporation increases the levels of concentration.

♦ Groundwater

3.9 Culturally groundwater is a big issue in India as it is linked to land ownership. Groundwater belongs to the landholder and is saleable. The quality of groundwater can be effected by: unsewered domestic waste; disposal of liquid urban and industrial waste; inadequate disposal of solid domestic and industrial waste; cultivation with agri-chemicals; mining activities; natural geological formations; eutrophication; lake and reservoir pollution pathways; and irrigation.

3.10 Increasing salinity resulting form the effects of irrigation agriculture is one of the oldest and most widespread forms of groundwater pollution. It is caused by the dissolved salts in irrigation water being deposited following the evaporation of the water. The addition of further excess irrigation water merely leaches salts from the soil and transfers the problem to the underlying groundwater. In coastal areas excessive pumping out of

groundwater has lead to the intrusion of sea water. This coastal salinity effects 2.5 million hectares of land.

♦ Possible Remedies

3.11 Five and a half million hectares of agricultural land in irrigation areas is effected by salinity. Land reclamation works and sub surface drainage have been used as remedies. However, land reclamation projects take three to four years to realise its investment and drainage schemes are very cost intensive within five years at a 1:5 cost benefit ratio.

LIST OF PUBLICATIONS

3.12 The delegation received the following publication for reference:

- "Salinity Management in Agriculture": Proceedings of the National Conference, December 1998.

4 WORLD BANK

PARTICIPANTS

4.1 Mr Stephen Howes, Senior Economist; Mr M Balaubramanian, Senior Agriculturalist; and Mr Paul Singh Siddhu, Senior Agricultural Specialist.

MEETING AND DISCUSSION

♦ **India and the World Bank Group**

4.2 Mr Howes gave the delegation a background briefing on India and the World Bank.

4.3 India joined the World Bank in 1944 and is among its oldest members. It is the World Bank's largest single borrower, with cumulative lending of more than US$47 billion as of June 2000 in market based loans from the international Bank for Reconstruction and Development [IBRD] and development credits from the International Development Association [IDA], the World Bank affiliate that provides interest free loans to economies with low per capita incomes.

4.4 From 1949 to June 2000, the World Bank has extended about 215 loans and 292 development credits to India, totalling approximately US$26.2 billion from the IBRD and US$27.2 billion equivalent from IDA. As of 30 June 2000, the World Bank's lending portfolio of ongoing projects for India comprised 79 projects amounting to about US$11.5 billion.

4.5 Development challenges for India which the World Bank has been supporting are:

- reducing poverty and raising living standards;
- addressing health and nutrition needs;
- expanding access to education;
- furthering fiscal reform;
- private sector development;
- financing infrastructure;
- meeting energy needs;
- accelerating rural development;
- protecting the environment; and
- social development.

♦ **Sodic Lands**

4.6 Mr Siddhu explained the problem of sodic lands (salt affected soils) in Uttar Pradesh.

4.7 Soils which contain excess soluble salts that effect plant growth adversely are called salt affected soils. These soils can comprise of "saline soils" which contain soluble salts or "alkali soils" which contain excessive exchangeable sodium to adversely affect crop production. Salt affected soils have been known to occur in the state of Uttar Pradesh since time immemorial.

4.8 Salt affected soils develop extensively in irrigated, semi arid and arid regions where annual evaporation exceeds rainfall. Under such conditions there is little chance for excess salts to be leached away. Inadequate drainage further accentuates the problem. Water table rises largely due to inappropriate management of water both during conveyance and on farm use. This is the major cause of salinity in irrigation areas. Sodic soils in Uttar Pradesh have developed under impeded drainage due to nearly impermeable clayey sub soils. Sodic soils are toxic to plants and adversely affect human and animal health.

- **Sodic Lands Reclamation Project**

4.9 Mr Balaubramanian reported on the Uttar Pradesh sodic lands reclamation project.

4.10 Located in northern India, Uttar Pradesh is the fourth largest state in area, forming 9% of India's territory. It has a population of 148 million – more than 16% of India's population. About 42% of the state's population lives below the poverty line, compared with an Indian average of 36%. Literacy is low. About 80% of the state's population lives in rural areas, and about 72% of the population is engaged in agriculture. Agriculture in Uttar Pradesh is characterised by marginal holdings of less than 1 hectare (74%); holdings of 1 to 2 hectares make up another 15%. Rural infrastructure – roads and power – is weak.

4.11 Uttar Pradesh's agarian economy is being undermined by the twin problems of population pressure and land degradation. About 1.2 million hectares, or 7.2% of the state's net cultivable total, are currently unused because of a high build up of salts. Such soils contain high concentrations of exchangeable sodium in which finer soil particles are dispersed, water and air cannot penetrate, and highly alkaline conditions are created. In Uttar Pradesh, sodic lands are either common barren areas or barely productive plots mainly owned by marginal farmers.

4.12 Sodic lands reclamation technology is relatively simple but managerially complex, involving delineation of affected areas and soil testing, improvement of surface drainage, treatment of the affected land with substantial quantities of gypsum, flushing with good quality groundwater from tubewells, and maintaining continuous ground cover through intensive cropping to avoid a return of surface salts. However, past initiatives had a number of weaknesses, including limited institutional coordination; inadequate planning and a lack of benchmark data to identify sodic areas systematically; inadequate understanding of the total technology package, including drainage and assured irrigation; and "top-down" decision making with little encouragement to beneficiary participation.

4.13 Started in 1993, the Uttar Pradesh Sodic Lands Reclamation Project has tried to build on lessons learned and establish a new approach to sodic soil reclamation. The project is developing effective models for environmental protection and improved agricultural production. At the same time, it is strengthening local institutions and fostering

effective management of reclamation activities and other development programs with strong beneficiary participation. This pilot initiative encourages adjustments to the reclamation technology package, project management, scope of work, and policies. The US$111.2 million project is being financed with a credit equivalent to US$54.7 million from the IDA to supplement resources from the state government and beneficiaries. Administered by the Uttar Pradesh Land Development Corporation, the project is being implemented at the local level by beneficiaries organised and assisted by non-governmental organizations [NGOs]. It strives to increase the incomes of marginal farmers and formerly landless individuals and to build confidence and skills among beneficiaries so that the project's results can be sustained once support is withdrawn. The project accords well with the Bank's goals of assisting India to accelerate agricultural grown reduce poverty, and improve natural resource management.

4.14 The project has been deemed to be a success with its flexibility, systems of participatory management, decentralised decision making and capable management by the Uttar Pradesh Land Development Corporation. As a side benefit, the project has fostered the formation of women's self-help groups to improve the socio-economic well being of village families. The project has also resulted in being ahead of targets in terms of reclaimed lands, direct benefits to 200,000 mostly poor families, 16,000 previously landless families being given about 6,700 hectares of former common land which was sodic, increased cropping intensity and bringing about 17,000 hectares under cultivation for the first time.

LIST OF PUBLICATIONS

4.15 The delegation received the following publications for reference:

- Staff Appraisal Report on the Uttar Pradesh Sodic Lands Reclamation Project 1993;
- Project Appraisal Document for the Uttar Pradesh Sodic Lands Reclamation II Project 1998;
- World Bank Project Brief – Rural Development: Sodic Lands Reclamation; and
- Social Development Notes – Learing from the Past: Uttar Pradesh Sodic Lands Reclamation Project, March 2001

5 AGA KHAN FOUNDATION

PARTICIPANTS

5.1 Mr Nick McKinley, Executive Director and Ms Vijaya Pastala, Rural Development of the Aga Khan Foundation.

MEETING AND DISCUSSION

♦ Aga Khan Foundation

5.2 Mr McKinley outlined the background and goals of the Aga Khan Foundation [AKF].

5.3 The AKF is an international family of non-profit development agencies. It has affiliates in 12 countries. They work together to help people in search of better lives for themselves and their communities. AKF was established in 1967 by His Highness the Aga Khan, 49th Imam of the Ismaili Muslims.

5.4 The AKF's goal is to seek effective solutions to a number of key development problems. It does this through intellectual and financial partnerships with organising sharing its commitment and objectives. Most AKF grants are made to grassroots organizations testing innovative approaches in the field to foster sustainable self sufficiency.

5.5 In every undertaking, the AKF's goals are essentially the same:

- to make it possible for poor people to act in ways that will lead to long term improvements in their income and health, in the environment, and in the education of their children;
- to provide communities with a greater range of choices and the understanding necessary to make informed choices;
- to enable beneficiaries to gain the confidence and competence to participate in the design, implementation and continuing operation of activities that affect the quality of their lives;
- to put institutional, management and financial structures in place to ensure that program activities are sustainable without the AKF's continuing involvement; and
- development – new attitudes, skills and organisational abilities – is a long term business. The AKF is not restricted to a limited project timeframe, and is willing, where necessary, to make a long-term commitment to a particular region or problem.

♦ Gujarat Project

5.6 Ms Pastala described some of the work of the AKF in relation to the rural development programs utilisation of community based natural resource management to reduce rural poverty in Gujarat.

5.7 Gujarat is a coastal state with a population of 40 million. It is located on India's most exposed coastal area in the west bordering Pakistan. In the district of Junagadh there is a multi-caste society with a large number of commercial farmers. Over exploitation of the rich natural resource base has led to serious degradation. Salinity is a problem due to groundwater exploitation with electricity to rural areas subsidised and no State groundwater policy, bores are always being drilled and the groundwater pumped out. The lower aquifers are saline but the fresh upper aquifers are not being allowed to percolate down to recharge the lower aquifers. Bores are dug deeper so more saline water is drawn up. Sea water has been drawn into the groundwater. In addition the extraction of lime stone has damaged the aquifers, so in some places there is an intrusion of seawater into the groundwater.

5.8 The AKF is harnessing the human resources of the villages to establish village committees to implement:

- drinking water programs such as percolation wells and education of water conservation programs;
- water resource development by training in water management and efficient water use technologies and arranging visits to villages where similar programs had succeeded;
- soil and water conservation initiatives through simple and cost effective works (contour binding, spill-over dams to capture rainwater);
- improved farming practices such as low cost drip irrigation systems;
- farm forestry by planting trees on farm boundaries;
- working wasteland development plots by covering them with some vegetation;
- introducing salient resistant crops (chikoo or sapota);
- building biogas plants; and
- conducting training and educational courses.

LIST OF PUBLICATIONS

5.9 The delegation received the following publications for reference:

- AKF Rural Support Program: 2000 Annual Progress Report;
- "Harnessing the elements, improving lives: Community Management of Natural Resources"; and

- "Enriching Experiences" Monthly Newsletters, July 2000 – March 2001.

6 MINISTRY OF AGRICULTURE – INDIA

PARTICIPANTS

6.1 Mr P D Sudhaker, Joint Secretary and Dr C R Hazra, Agriculture Commissioner, Department of Agriculture and Cooperation Ministry of Agriculture; Dr B R Sharma, Assistant Director General, Water Management, Indian Council for Agricultural Research; Dr Suraj Bhan, Additional Commissioner, Department of Agriculture and Cooperation, Ministry of Agriculture.

6.2 Also in attendance: Ms Elizabeth Ward, First Secretary, Australian High Commission; and Dr Kuhu Chatterjee, Assistant Country Manager, South Asia ACIAR.

MEETING AND DISCUSSION

♦ Ministry of Agriculture

6.3 With a population 1 billion food security is a very big issue in India. Food production was 209 million tonnes in 1999 – 2000. In 2000 – 2001, food production dropped due to the drought. Thus saline and alkaline soils, waterlogged lands, faulty irrigation and other land degradation are key issues for the ministry as they pose a threat to the food production processes of India.

6.4 Therefore, the Ministry of Agriculture has a primary responsibility of management of saline lands in India through a number of bodies under its auspices including the Department of Agriculture and Cooperation, the Indian Council for Agricultural Research [ICAR] and the Central Soil Salinity Research Institute [CSSRI]. In addition there are several other research institutes and the State Agricultural Universities which undertake research on management of saline soils.

6.5 The Department of Agriculture and Cooperation is responsible for the formulation and implementation of national policies and programs aimed at achieving rapid agricultural growth through optimum utilisation of the country's land, water, soil and plant resources.

6.6 The Department undertakes measures to ensure timely and adequate supply of inputs and services such as fertilisers, seeds, pesticides, agricultural implements and also to provide agricultural credit, crop insurance and ensure remunerative returns to the farmer for agricultural produce.

6.7 The Department is entrusted with the responsibility for collection and maintenance of a wide range of statistical and economic data relating to agriculture, required for development planning, organising agricultural census, assisting and advising the states in undertaking scarcity relief measures and in management of natural calamities such as flood, drought, cyclone etc.

6.8 The Department is also responsible for the formulation of overall cooperative policy in the country, matters relating to national cooperative organizations, cooperative training and education.

♦ Indian Council of Agricultural Research

6.9 The ICAR is an autonomous apex national organization which conducts and promotes research, education, training and transfer of technology for advancement of agriculture and related sciences.

6.10 ICAR was established in 1929 and over the years developed research and training to work on production and other emerging problems confronting agriculture to meet the ever increasing demands for food, including research into salinity.

♦ Central Soil Salinity Research Institute

6.11 The CSSRI is a part of the Indian ICAR system after being established in 1969 and is located in Karnal (Haryana State). CSSRI research focuses on reclamation and sustainable management of salt affected soils and on the rational use of poor quality waters in agriculture.

6.12 The mandate of the CSSRI is to:

- undertake basic and applied research for developing strategies for salinity control, reclamation and management of salt affected soils and use of poor quality irrigation water in different agro ecological zones;
- provide leadership and coordinate network of research with state agricultural universities for generating and testing location specific technologies;
- act as a centre for training in research methodologies;
- act as a repository of information on the nature and extent of salt affected soils and poor-quality water in the country;
- collaborate with relevant national and international agencies in achieving the above objectives; and
- provide consultancy in the areas of salinity management and drainage.

♦ Study of Issues in Water Management in Preventing Waterlogging of Irrigated Lands

6.13 A study of the issues in water management in preventing waterlogging was undertaken by Haryana Agricultural University. It was found that as a result of inappropriate policies and practices of water management, extensive irrigated areas have been and are increasingly facing environmental degradation through waterlogging and soil salinisation. Waterlogging not only reduces the available agricultural area but also causes immense environmental damage as well as damage to buildings, roads and other structures and spread of endemic diseases. The primary cause of waterlogging is excessive water input/losses into a system that has finite storage and limited natural drainage capacity; excess water recharges the groundwater underlying irrigated lands, causing the water table to rise from its natural state.

6.14 Some of the factors which are directly or indirectly responsible for the problem of waterlogging in irrigation commands are: seepage losses even from lined water

distribution systems due to poor lining; inability to apply water at the rate at which it is used by the plants; unreliable canal water supply; mismatch between water supply and crop water requirements; insufficient drainage to dispose of excess water, especially during monsoon season; lack of farmers' involvement in irrigation management; poor overall management of irrigation projects; and, inappropriate water pricing policy.

6.15 Some of the suggested measures to avoid/overcome the problem of waterlogging are: development of appropriate databases to advise appropriate techno-economically feasible remedial measures; integrated planning of surface and groundwater to maintain hydrological equilibrium; improvement of the on farm irrigation efficiency to prevent avoidable percolation losses; periodic inspection and maintenance of canals/water courses to control seepage from water distribution system; improvement of regional surface drainage systems to ensure reduced accession to the water table from rainfall; development of appropriate mechanisms for the transfer of technology to defuse the developed technologies on efficient water management; construction of auxiliary storage reservoirs to facilitate water supply on demand; activation of Water Users Associations; installation of artificial subsurface drainage system; disposal of drainage effluents to maintain favourable salt balance at basin level and establishment of drainage organization for proper implementation of anti waterlogging projects.

6.16 Present knowledge, the study concluded, if judiciously applied is adequate to cope with many of the waterlogging and salinity problems. The rational development, conservation, distribution, use and management of water resources will lead to increased productivity, better economic returns and sustainable irrigated agriculture.

LIST OF PUBLICATIONS

6.17 The delegation received the following publications of ICAR and CSSRI for reference:

- CSSRI at a glance;
- CSSRI Perspective Plan "Vision 2020";
- Guidelines for Irrigation with Saline and Alkaline Waters;
- Subsurface Fresh Water Skimming System (Improved *Doruvu* Technology);
- Report of the Social Audit Committee on Salt Affected Soils; and
- Operational Research Project on Saline Irrigation in Karanpur, Mathura (UP) (Socio-Economic Consideration and Impact Analysis).

7 PARLIAMENT OF INDIA

PARTICIPANT

7.1 Mr Hardev Singh, India Branch of the Commonwealth Parliamentary Association.

CALL ON THE PARLIAMENT OF INDIA

♦ Parliament House

7.2 The delegation made a call on the Parliament of India and were given a tour of part of the Parliament House Estate by Mr Hardev Singh.

7.3 Parliament House is a very large circular building about 171 metres in diameter. The main focus of the building is the Central Hall with three axis running off it the Lok Sabha Chamber, Rajya Sabha Chamber and the Library Hall (formerly the Princes Chamber). The foundation stone of Parliament House was laid in 1921 and the opening performed by the then Governor General of India, Lord Irwin, on 18 January 1927.

♦ Central Hall

7.4 The Central Hall is a place of national historic importance as the transfer of power for the British (on 15 August 1947) took place here. The Central Hall is now used for holding joint sittings of the two houses (opening of Parliament after general elections, opening of sessions and addresses by the President). Outside these times the hall is used by members for informal discussions.

♦ Rajya Sabha Chamber

7.5 The Rajya Sabha is the Upper House and has 250 members distributed proportionally amongst the States and Union Territories based on their respective populations. Members are elected by the various State and Territory Legislative Assemblies. No member can be under 30 years of age. Twelve members of the Rajya Sabha are appointed by the President from persons who are prominent in the fields of literature, arts, science and social service.

7.6 The Rajya Sabha is a permanent body not subject to dissolution but one third of its members retire every two years. The Vice President of India is the ex-officio Chairman of the Rajya Sabha and elected by an electoral college consisting of members of both Houses of Parliament.

7.7 The Rajya Sabha Chamber is semi circular in shape. Members have dedicated seats. It is equipped with sound equipment, a simultaneous interpretation system and an electronic vote recording system. The vote recording system incorporates a microphone management system. It can be used to record “ayes”, “noes”, “abstentions” and counting members present for quorum purposes. The integrity of the electronic voting is maintained by requiring two hands to vote for 10 seconds: pressing a button to indicate the member’s vote and another button to indicate location and identity of the member. The House sits from 11:00am to 5:00pm.

♦ Lok Sabha Chamber

7.8 The Lok Sabha is the house representing the people and is the house in which governments are formed. It has 545 members with members elected every 5 years. Membership is divided amongst the States and Territories in proportion to their population. The minimum age for membership is 25.

7.9 Currently the government is in minority. There are 40 parties represented in the Lok Sabha together with various independents. The first hour of every sitting is allocated for questions like the House of Commons (Westminster) the various ministries are divided into five groups and fixed days allotted for questions. The procedure for asking questions is also similar to the House of Commons.

7.10 The major constitutional differences between the Houses are:

- the Lok Sabha is the House to which the Council of Ministers is responsible; money bills can only be introduced in the Lok Sabha; and grants the money for running the administration of India; and

- the Rajya Sabha has special powers to declare that it is necessary and expedient in the national interest that the Parliament may make laws with respect to a matter on the State lists or to create by law one or more all India services common to the Union and to the States.

♦ Library Hall

7.11 The Library Hall was originally constructed to serve as a conference hall for the rulers of the various States of undivided India and used to be called the Princes Chamber. Its wooden panelling contains 102 emblems of the various states. It now serves as a Library Hall where a large range of journals and newspapers are kept with a number of reading tables.

8 SOCIETY FOR PROMOTION OF WASTELANDS DEVELOPMENT

PARTICIPANTS

8.1 Mr V K Misra, Executive Director; Dr I P Abrol, Board Member; Mr R P Agrawal and Mr Pramod Tyagi, Program Directors of the Society for Promotion of Wastelands Development.

MEETING AND DISCUSSION

♦ The Society for Promotion of Wastelands Development

8.2 By way of background the National Commission on Agriculture, 1976 estimates, suggests that around 11.4 million hectares of land is saline and alkali effected. These lands are mostly localised in the semi arid heart of the state and in the region lying south west of the Ganges. With the abolition of Zamindari Act (1952) and the Land Ceiling Act (1960) various sections of hitherto uncultivated land were brought to the plough thus transferring through reforms the ownership of about 2 million hectares of land.

8.3 Further attempts had been made by the state government to reclaim this soil, but failed because of piecemeal and top-down approach followed by the organizations involved.

8.4 Against this background the Society for Promotion of Wastelands Development [SPWD] was founded. Its mission is to prevent, arrest and reverse degradation of life support systems, particularly land and water, so as to expand livelihood opportunities in a sustainable and equitable manner through people's participation. It has less than 50 employees, works with other NGOs and focuses on various projects.

♦ Projects

8.5 The SPWD has undertaken afforestation projects to halt further degradation of some wastelands where there are no feasible alternatives and to speed up the rehabilitation of saline and waterlogged lands.

8.6 A specific project undertaken by SPWD was in collaboration with Sarvodaya Ashram, Hardoi in a Sikandarpur village, Tadiawan block, Hardoi district. It was decided to conduct a village level survey so as to have an idea of the priorities of the village people to whom the land belonged. The survey clearly revealed that the farmers were in favour of the cultivation of agricultural crops rather than growing trees on their effected land.

8.7 Help was sought from CSSRI Karnal, which designed the technology and provided training to a small number of farmers at field level. The district administration and other departments of the State government provided subsidised amendments, channelising free borings and pumpsets to small and marginal farmers, making on farm development arrangements, supplying seeds, fertilisers and other inputs for crop production. Due to the varied socio-economic pattern of the land owners, three different programs were evolved by SPWD during the course of implementation of the project so as to cater to their different needs and ensure maximum involvement in the project. These were:

- Demonstration Program – for the most resource poor farmers;
- Farmers Initiative Program – for those farmers already trying to cultivate their fields; and
- information – passed on to those farmers who had the resources but lacked the information.

8.8 Emerging issues for SPWD from its work are:

- soil testing;
- irrigation (leaching or draining out of salts);
- crop cycles;
- field preparation;
- farmer/land selection (in the processes of reclamation); and
- motivational bottlenecks (to convince farmers to invest their time and money to ultimately enable continued cultivation).

LIST OF PUBLICATIONS

8.9 The delegation received the following publications for reference:

- SPWD Annual Report 1999-2000; and
- Wastelands News: Quarterly Newsletter, February – April 2001.

9 RAJASTHAN LEGISLATIVE ASSEMBLY

PARTICIPANTS

9.1 The delegation was welcomed by a group of staff of the Rajasthan Legislative Assembly [RLA] led by Mr Jaswant Singh Mali, Secretary of the RLA and taken to the Legislative Assembly Chamber.

LEGISLATIVE ASSEMBLY CHAMBER

9.2 The evolution of the Rajasthan legislature has an important place in the constitutional history of India as it was the outcome of the merger of 22 princely states of Rajputana with the Union of India.

9.3 As per the provisions of Article 168 of the Constitution of India, each State has to establish a legislature consisting of one or two Houses. Rajasthan has a unicameral legislature known as the RLA.

9.4 The size of the RLA, which is determined by delimitation Commission, was 160 members in 1952 and presently is 200 members (15 women). The government has 153 members which has deferred the next redistribution to 2026. A term for the RLA is 5 years.

9.5 The chamber is semi circular. The Assembly elects a Speaker form the ruling party but upon election resigns from the party. RLA sittings are from 11:00am to 5:00pm but may be extended. Members speak from their places but curiously (for grandstanding) speaking time limits are not followed.

10 DEPARTMENT OF IRRIGATION AND COMMAND AREA DEVELOPMENT AND DEPARTMENT OF PUBLIC HEALTH ENGINEERING – RAJASTHAN

PARTICIPANTS

10.1 Mr Parmesh Chandra, Secreary, Department of Irrigation and CAD; and Mr H L Chanhan Chief Engineer (Rural), Department of Public Health Engineering.

MEETING AND DISCUSSION

- **Waterlogging**

10.2 The problem of waterlogging came about in the State of Rajasthan with the introduction of the canal system. Besides its advantage for western Rajasthan such as water for drinking and irrigation purposes and creating an oasis in the desert, its unscientific use has led to a situation where the water table is rising rapidly leading to waterlogging. In fact, there is active waterlogging in around 3,000 hectares and about 200,000 hectares is a potential waterlogging area where the water table is only three metres below the surface.

10.3 This problem becomes aggravated with the lack of natural drainage in western Rajasthan. When the Bhakhara-Nangal Project on the Ravi, Beas and Satluj rivers was conceived and implemented, drainage was provided completely for Punjab, partially for Haryana but not for Rajasthan.

10.4 Another reason for water logging is a quite high water allowance in the canal areas. The general feeling among the farmers is that the more water you put on the crop, the more the yield is likely to be. The ignorance of the farmers with regard to the topography of the area and exact water need of particular crops is also a very significant factor for the magnitude of this problem. Kota region is another area which is facing this problem and various projects are being funded there (refer next paragraph).

10.5 The delegation was further informed that the Government of Rajasthan has made lots of efforts from mid-1970s to date, not less than 60-70 consultant/expert studies have been made to tackle this problem, but without practical solutions. Whatever has been done, had been in a very isolated manner. In the Kota region where natural drainage is available, the Government is lining the water courses and putting in a sub-surface drainage system.

10.6 In the Indira Gandhi Canal area, initially tubewells were dug to extract water from the waterlogged area which could be used elsewhere or possibly put back into the canal. That is, recirculation of the same water. But this system of digging tubewells along the canal to reduce water logging has not succeeded very much. However, the Department did put some of this excess water into nearby depressions for fisheries development to be taken up and it proved to be a very successful experiment.

10.7 The third experiment was to create slight slopes in that area and collect water there and then pump it out. However, it was not possible to put this water back into the canal

because the water was to be used for drinking purposes. As the water is saline and contains chemical effluents it was not fit for drinking purposes.

♦ Drinking Water

10.8 The main source of drinking water supply is ground water. About 31% of Rajasthan has saline groundwater with electricity conductivity levels over 8ds/cm in the west down to 6ds/cm in the east of the state. Salinity wise, in 19,016 habitations the situation is termed 'critical'. Whilst according to international standards, 500PPM is the parameter to declare water to be saline or saline free, the Bureau of Indian Standards has set this limit to 1,500PPM. In some areas where the PPM stands from 3,000 to 12,000 the standard has further been lowered. Rajasthan is also affected with a problem of excess fluoride in drinking water.

10.9 The Ministry of Rural Development (Government of India) provides the funds which allocate funds to all states afflicted with these problems. About Rs.205 crores (1 crore = 10 million) to Rs.250 crores are received from the Government of India every year. Under the Desert Development Program, the State receives up to 50% of the funds needed.

10.10 For rural drinking water schemes, of the funds are also made available by the Government of India. In the command area, the irrigation part of the expenses like canal lining are borne by the State Government whereas for things like water courses, 50% funds are provided by the Central Government.

10.11 The Department was now switching over from underground water supply schemes to surface water supply schemes. Canals would be the source of drinking water as they get saline free water from rivers which originate in the mountains.

11 RAJASTHAN LEGISLATIVE ASSEMBLY BUILDING

PARTICIPANT

11.1 The delgation made a call on Mr Jaswant Singh Mali, Secretary of the RLA, conducted the delegation on a tour of the new RLA building.

CALL ON THE SECRETARY OF THE RAJASTHAN LEGISLATIVE ASSEMBLY BUILDING

♦ **Legislative Assembly Building**

11.2 The exterior of the building is in the style of the Jaipur Palace in pink/terracotta with famous traditional features of Rajasthan such as Jharokas, Chhatries, Kamani, Baradaries, Arches, Todes etc., in Jodhpur and Bansi Paharpur stone. The interior features traditional Rajasthani art on the walls and ceiling.

11.3 The new RLA Building is one of the most modern legislature complexes in India. Work commenced in November 1994 and was completed in March 2001.

11.4 The building comprises of a main Assembly Hall on the first floor and a hall of identical capacity over it on the fifth floor for a future Vidhan Parishad. Above this hall, a circular steel dome of 31.7 metres diameter is a special feature of the building.

11.5 Main features of the building and grounds are:

- a total area of 16.96 acres;
- a total built-up area of 56,508 sq. metres;
- a building area 110.6 metres x 110.6 metres;
- 8 storeys with a building height of 44 metres;
- a seating capacity of 260 metres in the Assembly Hall;
- circular dome diameter of 31.7 metres;
- a seating capacity in the galleries for public, press, VIP and officers of 972;
- VIP rooms for Speaker, Deputy Speakers, Chief Minister and Leader of the Opposition;
- 34 rooms for Ministers;
- 6 rooms for Party Leaders;
- 16 committee rooms;
- a library;
- a canteen;

- a VIP entrance and brass laminated ornamental gate and three other entrances; and
- 31 residential houses for officers and staff.

Other features include:

- central air conditioning up to the third floor;
- electronic voting and conference system; and
- audio video recording system.

12 ASSOCIATION FOR RURAL ADVANCEMENT THROUGH VOLUNTARY ACTION AND LOCAL INVOLVEMENT

PARTICIPANT

12.1 Mr Sachin Sachdeva, Executive Director and Mr Jaipal Singh, Program Director of Association for Rural Advancement through Voluntary Action and Local Involvement [ARAVALI].

MEETING AND DISCUSSION

12.2 The delegation was advised that ARAVALI is a secular, apolitical, non-profit, autonomous organisation, registered under the *Rajasthan Societies Registration Act 1958*. Its mission statement is:

> *All round and large scale development requires a combination of efforts and approaches, which cannot be solely provided by one agency or system. To ensure that the benefits of development reach the poor in particular and people in general, it is imperative that voluntary agencies and the government pool their strengths and become partners.*

12.3 ARAVALI strongly believes in the strength of collaboration and, thus, aims to usher in constructive, useful and complementary relationships between government and voluntary agencies, to address the problems of the poor and the under privileged in Rajasthan. It also promotes the principles of transparency, efficiency and accountability and strives to promote them in its partner organisations. A number of secretaries of Government of Rajasthan agencies are ex-officio members of ARAVALI.

12.4 The roles ARAVALI performs are:

- capacity building of voluntary agencies;
- networking and liaison between stakeholders in the development process;
- promotion of collaborative initiatives;
- promotion of development innovations and their up scaling;
- development consultancy for NGOs and government;
- grant management for funding agencies; and
- policy and strategic research.

12.5 Its core funding has been received from the Government of Rajasthan since 1997, but it will discontinue. Funds are also raised from its own sources (Aga Khan Foundation, Sir Ratan Tata Trust, National Foundation for India and others) as well as funds raised from consultancy assignments. Its operating budget for 2000-2001 was Indian Rupees 7 million (of which 1.5 million was from the Government of Rajasthan).

12.6 The program areas of ARAVALI are:

- Human and Institutional Capacity Enhancement – providing professional assistance for voluntary agencies, planning and providing consultancy support;
- Microfinance for small voluntary agencies in Rajasthan;
- the Rajsamand Project – which includes training government staff, implementation of government schemes, operational research and a field centre for experimentation;
- Natural Resources Management – by the management of environmental resources through communities.

12.7 In the area of natural resource management ARAVALI is actively involved in:

- promotion of effective community based management of natural resources;
- capacity building support to organisations for natural resource management;
- identification, analysis and projection of natural resource management issues;
- facilitating institutional linkages between donors, government and voluntary agencies;
- grant management of the funding to voluntary agencies;
- gaining financial support from the Aga Khan Foundation, New Delhi.

12.8 ARAVALI also fosters voluntary agency action in getting involved in natural resource management, strengthening village level institutions for things like forest management and in agriculture and livestock management.

13 FOLKETING (DANISH PARLIAMENT)

PARTICIPANT

13.1 The delegation made a call on the Folketing (the Danish Parliament), was met by Ms Grethe Madsen, and conducted on a tour of the Danish Parliament.

CALL ON THE FOLLKETING

♦ **Danish Democracy**

13.2 Following a demand to the King of Denmark in 1848 a free constitution was granted the next year. The main principles of the Constitutional Act of June 1849 are still found in the current Constitutional Act 1953.

13.3 One of these principles of Danish democracy is that the administration of the State is based on voluntary agreement between the constitutional monarchy and the citizens of the country. That is citizens have no direct influence on the administration of the State but exert their influence indirectly by voting. There are elections for the legislative assemblies at three levels: national (the Folketing); county councils; and, local/town councils. Referenda open up the possibility of gaining a direct popular influence. At the same time, the citizens acknowledge the principle that the majority make decisions. In return the Constitutional Act gives the citizens important rights and liberties such as: the right to vote; freedom of speech; freedom of assembly; the safeguarding of private property; equal employment opportunities; and the right to benefit from social services.

13.4 Supreme power in Denmark is, like in most other Western democracies, divided into three independent organs which balance one another: the legislative, the executive and the judicial powers. The Folketing is the sole organ empowered to legislate. However, the Acts only take effect after receiving the Royal Assent. In practice, the monarch is beyond the tripartition of power but the Monarch formally exerts authority by appointing or dismissing Ministers.

13.5 The legislative and the executive powers are balanced against each other. Members of the Folketing can overthrow a Cabinet or a minister by a vote of no confidence whilst the Prime Minister can dissolve the Folketing, at any time. Ministers' do not have to be members of the Folketing but are still under the control of the Folketing and its standing committees, and in certain circumstance may be impeached.

♦ **Folketing**

13.6 The electoral system, under the Parliamentary Election Act, is based on proportional representation which results in representatives from all parts of the country and of minority political groupings obtaining seats in the 179 member House (with an average age of 46). 178 members belong to parliamentary groups (of which there are ten). There are 66 female members. As a result of proportional representation there have been a number of minority governments that has given rise to the nickname "house of compromise". A term is four years.

13.7 The Folketing is presided by the Speaker who is elected by the House. The Speaker always votes and takes part in debates. There are four deputy Speakers who are elected by the House and come from the major groupings.

13.8 Bills can be submitted either by the Government or by Members of the Opposition parties. Bills are read three times before adoption. At the first reading, the bill is discussed in general terms and referred to a committee. The committee may make a report which may contain recommendations to the Folketing as well as eventual amendments. The bills is then discussed in detail in the Folketing. The individual sections and eventual amendments to the bill are put to vote for the second reading. Usually a bill passes on directly to the third reading, but it can also be referred back to a new committee stage. Subsequently, the committee usually makes a supplementary report that may contain further proposed amendments. At the third reading, eventual new amendments are discussed and voted on before the bill is debated in its entirety.

13.9 Whilst major debates take place and formal votes are in the chamber a lot of the decisions are prepared in the committees (as workshops of the Folketing). The work of committees is primarily linked to the passage of legislation but may also follow issues within their "spheres of competence". There are 24 standing committees, largely corresponding to ministries and comprise of 17 members each.

13.10 The Folketing sits at 1:00 pm on Tuesdays and Wednesdays and 10:00 am Thursdays and Fridays. Questions only occur on Wednesdays. Members can put questions to the ministers regarding a public matter and ask for a written or an oral reply. Replies to the oral questions are given briefly, in the Chamber, during the weekly Question Time. Since 1997-98, a weekly Question Hour was introduced. This hour is held immediately before Question Time. Question Hour differs from Question Time as the minister does not prepare an answer beforehand but has to reply to the question on the spot.

13.11 Sessions open on the first Tuesday in October and conclude by the following first of June.

♦ Folketing Building

13.12 The Folketing building burnt down in 1884 with rebuilding completed in 1918.

13.13 The delegation was shown the former Upper House (Landsting) Chamber, the lobby ("Conversation Room") which is used to welcome VIPs, and the Folketing Chamber.

13.14 The Folketing Chamber was being renovated for the upgrading of cameras as proceedings are broadcast on closed circuit television. All sessions are in public. Dress in the chamber can be casual and is left to the discretion of the member. There has been electronic voting for 12 years. Boards indicate by coloured lamp which way a member votes (green for "ayes", red for "noes" and yellow for an abstention). There is no Hansard as debates are taped and recorded on disc.

14 AUSTRALIAN EMBASSY – COPENHAGEN

PARTICIPANTS

14.1 The delegation made a call on the Australian Embassy and was briefed by His Excellency Dr Malcolm Leader, Australian Ambassador and Mr Anthony Pearce, First Secretary.

BRIEFING

14.2 The delegation was briefed on aspects of Australian–Denmark bilateral relations, trade and the welfare state in Denmark.

14.3 The Australian Embassy, after 25 years, in Copenhagen was closed down in 1997. This meant that the Australian Embassy in Stockholm covered 8 countries (including Denmark). Thus an embassy was reopened in Copenhagen and which also covers Norway and Iceland. The new premises would be ready for occupation in August 2001. The delegation was thus welcomed as it helped open doors to the Danish Government for mission staff.

14.4 Trade between the countries heavily favours Denmark. Australian trade has been a bit piecemeal for instance as every now and again a high speed ferry is sold to Denmark. However, wine and education are big growth areas. Many Scandinavians choose to study in Australia.

14.5 Denmark is highly taxed, both personal income tax and value added tax. This pays for the deliberate path chosen by the country to be a welfare state. Denmark also contributes a lot to overseas aid (1% of GNP which is the highest in the world). Aid is targeted for overseas projects with cooperative partners.

RECEPTION

14.6 The delegation later attended a reception hosted by the Australian Ambassador held in honour of the Australian delegates attending a World Nurses Conference.

15 EUROPEAN ENVIRONMENT AGENCY

PARTICIPANTS

15.1 Mr Chris Steenmans, Project Manager, Land Cover and Remote Sensing and Mr Dimitrios Tsotsos of the European Environment Agency.

MEETING AND DISCUSSION

♦ European Environment Agency

15.2 The aim of the European Environment Agency [EEA] is to establish a seamless environmental information system. This is done to assist the European Community [EC] in its attempts to improve the environment and move towards sustainability, including the European Union's [EU] efforts to integrate environmental aspects into economic polices.

15.3 The EEA was founded by the adoption in June 1990 of Regulation 1210/90. In 1993 the decision was made to locate it in Copenhagen. It now has a staff of 75 and a budget of 20 million euro per annum.

15.4 The 15 EU member states are members of the EEA as well as Iceland, Liechtenstein and Norway. The EEA regulation also provides for countries which share its objectives to participate in its activities. Thus its membership will expand as central and eastern European countries join (without being EU members).

15.5 The EEA's mission is to deliver timely, targeted, relevant and reliable information to policy makers and the public for the development and implementation of sound environmental polices in the EU and other EEA member countries. The EEA is able to carry out its mission by making use of the capacities of the European Environment Information and Observation Network [EIONET], a network of environmental bodies and institutions active in the member countries. The EEA's activities also involve cooperation with other international environmental agencies and organisation. The EEA builds on the work of existing institutions; it cooperates with them, coordinates the work at European level and tries to avoid duplication of work in environmental data collection, analyses and reporting.

15.6 The EEA does not aim to replace existing structures, but attempts instead to bring together, in compatible formats, the best available environmental data from the individual countries. This data forms the basis of integrated environmental assessments. The results are disseminated and made accessible to EU bodies, governments, the business community, academia, NGOs and the general public.

15.7 The EEA believes successful environmental policy and environmental management is not about coping with the occasional disaster but in detecting, analysing and responding to the slow moving, underlying trends that may generate problems in the future. The role of the EEA is central in anticipating such changes in making and helping Europe equip itself to respond.

♦ EEA Activities

15.8 The four new activities of the EEA are: networking; monitoring; reporting; and, acting as a reference centre.

15.9 The EEA aims to develop and interconnect the means for Europe wide environmental data gathering and processing. This includes establishing and developing the EIONET and cooperating with international organisations and programs.

15.10 A major activity of the EEA is offering a reliable, cohesive, simple, low cost routine monitoring reporting system on the environment. It seeks to deliver timely, comparable, harmonised data and integrated environmental assessments.

15.11 The EEA also facilitates environmental action through acting as a centre of excellence and as a single clearing house for environmental data by encouraging the standardisation of methods of measurement, providing uniform assessment criteria and harmonising data.

15.12 A principal function of the EEA is to make sure that the information needed by policy makers in the European institutions, in the member states and to the public generally, is readily available. This facilitates the preparation of responses and enables evaluation of the effectiveness of existing legislation.

♦ Water Stress

15.13 One of the current topical issues is water stress. Current EU policy actions are:

- integrated management and planning of water resources on the basis of river basins;
- water use efficiencies (demand side management);
- progressive pricing policies; and
- policy instruments which include framework directives, taxes, voluntary agreements and tradeable permits.

15.14 The work of the EEA is to support those policy actions with up to date data and information to facilitate analysis, public understanding and political agreement in regard to issues such as water quality/quantities, water use efficiencies and the costs/benefits to the supply and use of water.

LIST OF PUBLICATIONS

15.15 The delegation received the following publications of the European Environment Agency for reference:

- Water Stress in Europe – can the challenge be met?;
- European Environment Agency annual report for 1999;
- Information for improving Europe's Environment;

- Environment in the European Union at the turn of the century: soil degradation;
- CORINE (Coordination of Information on the Environment program) Land Cover: a key database for European integrated environmental assessment;
- Management of contaminated sites in Western Europe (Topic report No. 13/1999);
- Sustainable water use in Europe: Part 1 – Sectoral use of water (Environmental assessment report no.1);
- Groundwater quality and quantity in Europe (Environmental assessment report no.3);
- Nutrients in European ecosystems (Environmental assessment report no.4);
- Sustainable use of Europe's water? (Environmental assessment report no.7);
- Environmental Signals 2001: EEA regular indicator report (Environmental assessment report no.8)
- Down to earth: soil degradation and sustainable development in Europe – a challenge for the 21st century (Environmental assessment report no.16);
- Sustainable water use in Europe: Part 2 – Demand Management (Environmental assessment report no.19);
- Article "Report on Reports: Taking Stock in Europe", published in Environment January/February 2001

16 MINISTRY OF ENVIRONMENT AND ENERGY – DENMARK

PARTICIPANTS

16.1 Mr Mogens Kaasgaard, Water Supply and Wastewater Division and Mr Martin Skriver, Water Supply of the Ministry of Environment and Energy.

MEETING AND DISCUSSION

♦ Administrative Framework

16.2 The Ministry of Environment and Energy is in charge of administrative and research tasks in the area of environmental protection, energy and planning. In Denmark the administration at state level is managed by the Ministry of Environment and Energy. At regional and local level, much of the administrative responsibility has been delegated to local governments in counties and municipalities.

16.3 One of the agencies of the ministry, the Danish Environmental Protection Agency [EPA], administers environmental legislation and prevents and combats the pollution of water, soil and air in Denmark. An important task is monitoring the state of the environment and disseminating information related to this. With the assistance of other national and local authorities, the EPA gathers information on such environmental hazards as the emission of chemical substances to the air and the use of pesticides in Denmark.

16.4 In this area most Danish law is the implementation of European Commission regulation. At the same time, as indicated, there is a broad delegation of authority to local bodies.

16.5 Work is based on action programs that covers the EPA's areas of responsibility:

- environmental protection in general;
- aquatic environment;
- chemicals;
- pesticides;
- products and industry;
- soil and groundwater; and
- waste and recycling.

♦ Country Characteristics

16.6 Characteristics of Denmark are that its water use intensity is lower than the EU average and that the extent of its agriculture is above the EU average whilst the extent of its wooded area is less than half the EU average.

16.7 Denmark does not have a specific water salinity problem but as 99% of the country's water supply is groundwater based the EPA takes action to ensure that groundwater resources are protected and used sustainably to protect the drinking water supply and to ensure sufficient water for lakes and watercourses. In addition, the EPA both regulates the environmental conduct of industry including the discharge of wastewater and takes responsibility for its treatment.

♦ Danish Water Supply

16.8 The scope of the Danish water supply system is a daily household consumption of 145 litres per person through: 180 public water works in larger towns and cities supplying 290 million cubic metres of water per year; 2,800 private water works in the countryside supplying 180 million cubic meters of water per year; and 90,000 private wells. Roughly water use is split one third each for agricultural use, household use and industry.

16.9 The administration of water supply is divided between the three tiers of government:

- EPA (national) – regulations and guidelines, appeals against decisions made by local and regional councils;
- Regional Councils (counties) – integrated planning, water abstraction and the monitoring, mapping and protection of water resources; and
- Local Councils (municipalities) – water distribution (including plans), tariffs and supervision of drinking water quality and quantity.

16.10 The permit system means that every abstraction or well requires a permit for location, extraction rates and duration (up to a maximum of 30 years). Permits are issued by regional councils for irrigation and water works and local councils for individual wells.

16.11 Integrated planning is carried out by regional councils to provide for sectoral water resources, surface water quality, waste deposits, agriculture, raw materials and the environment.

16.12 Water supply planning is carried out by local councils to designate supply areas for water works and to layout the distribution system. Local councils are also responsible for supervision and monitoring.

16.13 Tariffs are approved by local councils. The annual tariff has two components: a fixed amount for being connected to the water works; and, a variable amount based on actual consumption. The average consumer tariff is about US$4.0 per cubic metre and consists of: water 20%; waste water 44%; water tax 14%; wastewater tax 2%; and VAT 20%. Local water works authorities must observe the "break even" principle and have balanced accounts over the years with no profits. Metering has been mandatory since 1999.

16.14 Groundwater protection is based on the environmental goal of water supply being based on unpolluted groundwater. The main problems are from intensive agriculture (pesticides, nitrates and contaminated land). Since 1997, regional councils have been given a new framework for groundwater protection. Components of the framework include: geological mapping of drinking water areas (the mapping will be funded by the

fees on abstraction permits) and preparation of action plans (in consultation with the public and stakeholders prior to adoption).

16.15 The action plans are based on voluntary agreements between landowners and authorities and are funded as much as possible by EU agricultural subsidy schemes with any shortfalls made up by consumers. If a reasonable voluntary agreement can not be reached the regional council can order a specific land use with the landowner compensated.

16.16 The 1994 10 point plan for protection of ground and drinking water included:

- bans on environmentally harmful pesticides;
- a levy on pesticides to cut usage;
- 50% cut in nitrate pollution by 2000;
- promoting organic farming;
- designating drinking water protection areas;
- clean up of contaminated soil;
- afforestation and biodiversity;
- dialogue with agricultural organisations;
- European effort; and
- improved control of drinking water and groundwater.

16.17 The 50% reduction target in nitrate pollution was not met and resulted in the Aquatic Environment Action Plan of 1998. This included the establishment of wetlands, no application of liquid manure between harvest and 1 February, setting a maximum livestock density of between 1.7 and 2.3 units per hectare, and having 65% of fields with vegetation cover in winter.

♦ Waste Water

16.18 The EPA sets the national standards, statutory orders and guidelines; the regional authorities undertake water quality surveys, monitoring and license discharge; the local authorities prepare the waste water master plans.

16.19 The water quality of about 60% of the rivers and lakes are below the guidelines standards. The main cause is wastewater outlets and stormwater overflow.

16.20 Eighty percent of wastewater comes from households and 20% from industry. Many rural householders are not connected to the sewer system and have only settlement tanks. Local authorities are responsible for waste water handling and therefore have built and operate the infrastructure – all are non profit. Local authorities have also made offers to rural householders to connect them.

16.21 There is a national act for charging for wastewater. It provides for the principle of "revenue neutrality", no cross subsidisation and polluters pay. There is a once only payment for physical connection to the sewer with ongoing annual costs for all types of wastewater based on water consumption or estimated water consumption. There is a surcharge for highly polluted wastewater. There is also a wastewater tax for countryside soak away graduated down from effluent from septic tanks to mechanical/biological treated effluent to approved soak away.

16.22 However, funding is a problem as the ministry has to provide the money to the regional and local councils for to carry out the new functions imposed on them.

17 UNIVERSITY OF TECHNOLOGY, DELFT – DEPARTMENT OF LAND AND WATER MANAGEMENT

PARTICIPANT

17.1 Professor Robert Brouwer, Professor in Irrigation and Drainage and Head of the Department of Land and Water Management, University of Technology.

MEETING AND DISCUSSION

♦ Department of Land and Water Management

17.2 The education and scientific research of the Department of Land and Water Management is concentrated on the planning, design, construction and operation of water management systems, including the organisational aspects. Areas of special interest are:

- design of water management and distribution systems such as polders, irrigation/drainage systems, flood control systems and urban water management;
- maintenance planning and budgeting of water management systems;
- design of operation strategies and control algorithms for controlled water systems;
- integrated water management with emphasis on policy analysis and the decision methods for developments in water management, including the legal and institutional environment; and
- river basin management.

17.3 Staff of the department conduct consultancies for foreign projects. Professor Brouwer has worked in Egypt, Nigeria, Afghanistan and Bangladesh amongst other countries. Discussion with Professor Brouwer canvassed many aspects of salinity.

♦ Salinity

17.4 Salinity has been a problem for a long time, at least 1,000 years in places like Mesopotamia. It has only been in the last 50-100 years that the problem of salinity has been understood. Salinity in the soil is caused by capillary suction. As a saline water table rises, the water is sucked out by the plants with the salt left behind in the soil which eventually kills the plants.

17.5 The problems are man made. Irrigation systems have lead to poisoned fields. Professor Brouwer advised that whilst rivers may be regulated with dams etc., the rains can't be regulated. The remedies to salinity cost money.

- **Sub Surface Drainage**

17.6 In the Netherlands with low lying land an underground drainage system has been developed to lower the water table. An adequately maintained polder system however flushes out salt due to the high rainfall.

17.7 The early Dutch dug trenches which were filled with branches and twigs and drained into the polder system. Nowadays tubes are used. The saline water from the polders is pumped into rivers and the sea.

- **Mineral Extraction**

17.8 In Iran it is forbidden to pump into rivers, instead it is pumped to evaporation basins. This could be a commercial activity. Indeed, France and Germany, in the upper catchments of rivers that flow through the Netherlands valuable minerals are extracted whilst certain other minerals are flushed back into the rivers.

- **Arable Land**

17.9 Professor Brouwer opined that sub surface drainage protects the upper soils form salinity. It all boiled down to wanting to keep land arable, then fresh and saline water need to be separated to keep the top layer of soil at a salt level that can be tolerated. This can be complemented by the planting of salt tolerant crops, plants and grasses.

17.10 Essentially it is a priority of individual societies as to how to balance between food production and the protection of the environment. The World Bank guidelines for evaluating projects could be adapted in factoring in sustainable agricultural practices.

- **Urban Salinity**

17.11 Professor Brouwer advised of a few measures he was aware of to counter salinity in buildings. In the Netherlands as well as in some Middle Eastern countries buildings have used chloride resistant cements. Elsewhere deep wells and trenches have been dug around the foundations of buildings.

- **River Basin Management**

17.12 Professor Brouwer advised that EU researchers advocate catchment basin management. He says it is the way to go to manage the problem of salinity. The consensus is basin wide land and water plans. The long term strategy is what do we want for this basin to leave for future generations. There is “no standard recipe” to reverse salinity. However, as cultures differ from country to country the implementation of a long term sustainable framework must be decentralised.

18 MINISTRY OF TRANSPORT, PUBLIC WORKS AND WATER MANAGEMENT – NETHERLANDS

PARTICIPANTS

18.1 Mr Hank J de Haan, Deputy Director, International Affairs and Mr Frank P Hallie of the Ministry of Transport, Public Works and Water Management. Also in attendance Ms Suzanne McCourt, Second Secretary, Australian Embassy.

MEETING AND DISCUSSION

♦ The Ministry of Transport, Public Works and Water Management

18.2 The Ministry of Transport, Public Works and Water Management is active in numerous policy areas the most pertinent being the Directorate-General of Public Works and Water Management.

18.3 The Directorate-General is responsible for protection against floods, clean water and supply, and the management and construction of highways and waterways. The most extensive task of the Directorate-General is the executive of policy for dikes, water quality and quantity, roads, waterways and traffic safety.

♦ Country Characteristics

18.4 The Netherlands has Europe's highest population density and a high level of both agricultural and industrial activities. The Netherlands also lies in the delta of the Rhine, Meuse, Schelde and Eens Rivers all international catchments. Over the years, thousands of kilometres of dikes and embankments have been constructed to keep the country dry.

18.5 The country's water management problems are how to manage, divert and drain excess water which is exacerbated by: rising sea levels; increasing river discharges; an already low-lying country experiencing some subsidence; and precipitation increases in winter.

♦ River Basin Management

18.6 As the Netherlands is at the bottom of four international river basins it is very conscious of local actions which have consequential impacts downstream. Therefore it is strongly behind the EU requirements for river basin (catchment) management plans. This confirms the general thrust for catchment management approaches adopted by New South Wales legislation in 1989.

18.7 The government prepared a document on sustainable river basin management arising from recommendations of an international exert workshop and published for the second world water forum held in the Netherlands in March 2000. The Netherlands recommendations for river basin management aims for a complete management and control system for achieving sustainable water management through the river basin. Guidelines for best practice in river basin management is in the following five stages.

18.8 The first stage consists of an assessment of the institutional framework and of resources and needs. Institutions and legal provisions in the sphere of water management are

needed as the basis for setting up management systems for river basins. There should be a clear allocation of duties and responsibilities at the various government levels, i.e. the establishment of competent authorities. In addition, a basis is needed for issuing emission licences, setting quality standards, and compliance and enforcement.

18.9 Assessment of resources and needs is of paramount importance for enabling river basin management to get started. Knowledge about the strategic assets of the river basin, and about the uses, the needs and the pressures exerted on it, constitutes the basis of its objectives and plans.

18.10 The implementation of the second stage depends on whether the river basin to be managed is transboundary (i.e. interstate in a federal state). Countries sharing a river basin can initiate cooperation on technical matters, as a first step to developing mutual understanding and trust, and political commitment for further cooperation. They should open consultation and attempt to draw up an agreement or other arrangement to cooperate in managing the river basin. Such an agreement does not need to be legally binding. It should preferably cover the whole basin, as integrated management cannot achieve its full potential if parts of the river system are excluded, or if there is no common overall objective.

18.11 The Dutch also push for setting up a joint or coordinated body to serve as platforms for coordination and negotiations. One example is the International Rhine River Commission, which by all accounts has been a success.

18.12 The third and fourth stages form the heart of the management system. They address the development and the implementation of the management plan. The plan is a means to support and improve operational management. In the third stage, the authority draws up (or coordinates the drawing up of) a management plan for the next five to ten years. This planning process should be open to linkage with issues outside the field of river basin management and the basin, to overcome upstream-downstream conflicts and balancing human uses with ecosystems.

18.13 The contents of a plan very much depend on the specific physical and political conditions. In general a plan should consist of the following main elements: a description of the river basin (assessment of resources and needs), an outlook on probable economic; demographic and ecological developments; formation or objectives taking account of the balancing of human uses and ecosystems; and, a set of measures needed to attain each of those objectives. The level of detail with which these elements can be included in the plan will depend on the capacity available and the needs within the specific basin.

18.14 The fourth stage concerns the implementation of the management plan. The plan should be implemented by the authority or governments on the one hand, and by businesses, local communities and other stakeholders on the other hand. Each player has their own responsibilities, but attaining the objectives of the management plan can only be the result of cooperation. Part of the tasks at this stage may include routine registering by the authorities of water relevant activities (such as discharges of wastewater), checking compliance mechanisms, issuing licences, and carrying out measurements.

18.15 This stage also comprises the physical tasks such as the construction of sewage treatment plants, the installation of new technology, the construction of irrigation works

and the restoration of natural environments. There should be scope for the unexpected by amending some of the planned actions to meet changing circumstances. Implementing planned actions also provide new experiences that may be useful for the next cycle of planning.

18.16 The fifth stage concerns the evaluation after a specific number of years of implementation, using the results of compliance monitoring. Making and implementing plans is a trial and error process. Compliance monitoring should ideally start at the same time as the implementation of the plan. It is important not to start evaluation too early, so as not to get false trends. However, it is equally important to agree on a time period so as to be sure that the evaluation will be carried out and can lay the foundation for the next cycle of planning, based on the framework presented here.

♦ Water Markets

18.17 The delegation was advised that tradable water rights can be an important tool for river basin management, but they are only effective if a number of conditions are met:

- the basic water demands of citizens and ecosystems are safeguarded;
- the rights should be defined and agreed upon;
- utilisation of the rights should be physically possible;
- monopolies can be prevented; and
- for transboundary river basins cross jurisdictional agreements have been reached.

18.18 Tradeable emission rights are often not feasible because of the large number of different pollutants – many of which will only be emitted by one or a few polluters in a sub-basin – and in case of diffuse pollution.

♦ Other Issues

18.19 A contribution to salinity in the Dutch water supply is the intrusion of sea water. The historic policy had been the separation of fresh water from saltwater. Thus safety has been at the cost of some ecological deterioration. Current policy in coastal zones is now a step by step approach in acknowledging the interdependence of the salt and fresh water systems by balancing both safety and biodiversity. This is also manifested in a coastal sand dune policy of places letting sand dunes find natural equilibriums.

18.20 The Dutch also encourage the export of their expertise in water management by way of consultancies to other countries and by way of foreign aid and development projects.

LIST OF PUBLICATIONS

18.21 The delegation received the following publications for reference:

- Dutch Water Management is ready for the next Century, October 1997;
- Water in the Netherlands, 1998;

- Fourth National Policy Document on Water Management Government Decision, Abridged Version, December 1998;
- A Coastal Zone Perspective: Preparatory Study, March 1999;
- Programme for the Netherlands involvement in foreign water sector: Partners for Water, February 2000;
- Towards Sustainable River Basin Management: Recommendations and Guidelines on Best Management Practices, March 2000;
- Visions for the Rhine, March 2000;
- The Ministry of Transport, Public Works and Water Management: Factsheet, No.4 October 2000; and
- A Different Approach to Water, Water Management Policy in the 21st Century, December 2000.

19 AUSTRALIAN EMBASSY – NETHERLANDS

PARTICIPANT

19.1 Ms Marina Tsirbas, Counsellor, Australian Embassy, briefed the delegation on pertinent aspects of Australian-Netherlands relations. Also in attendance Ms Suzanne McCourt, Second Secretary.

BRIEFING

♦ Australia's relations with the Netherlands

19.2 Australia has a harmonious and productive relationship with the Netherlands. The Dutch are regarded as "like-minded", given their practical, liberal, outward-looking and reform-minded attitudes. There is a wide network of relationships, including through government, private organisations and personal contacts. Australia and the Netherlands have strong commercial ties, particularly in relation to direct investment. The Netherlands is Australia's second largest source of foreign direct investment for Europe and 4th largest source globally.

♦ Trade

19.3 The Netherlands is Australia's 7th largest trading partner in the EU and the 24th largest overall. Two way merchandise trade is around $1.8 billion. From 1995/96 to 1997/98 the value of Netherlands exports to Australia rose strongly while traditional Australian exports, particularly wool and coal, declined. This trend was reversed in 1997/98, when Australian exports to the Netherlands, led by strong growth in coal, aluminium and food/wine, jumped by 41% from $586 million to $829 million. In 1998/99 Australian exports remained strong at $863 million. Imports form the Netherlands were valued at $918 million in 1998/99.

♦ Investment

19.4 The Netherlands is ranked as the world's 6th largest overseas investor. Identifiable Dutch investment in Australia has increased significantly since the 1980s. The total stock of Dutch investment in Australia including portfolio investment, was $12.2 billion in June 1998. The Dutch business community is increasingly aware of the strengths of the Australian economy, and Australia's potential value as a regional headquarters in a regional environment whose medium to long term potential remains strong.

19.5 More than 70 major Dutch businesses are established in Australia including Shell, KLM, Philips, ABN-Amro, Rabobank, ING, KPN and Amsterdam Airport Schiphol, who as part of a consortium have successfully tendered to manage Brisbane Airport. There is also growing investor interest among smaller companies such as IT management consultants Pink Elephant.

19.6 The total stock of Australian investment in the Netherlands, including portfolio investment, is A$3.4 billion, making the Netherlands the 9th largest recipient. Companies operating in the Netherlands include AMP, Qantas and Pasminco.

♦ Cultural Relations

19.7 People to people contacts underpin the economic and political links. There are some 200,000 to 300,000 Australians of Dutch origin, and there has been steady growth in the number of Dutch visitors to Australia. The Netherlands is the 3rd largest source in Europe of short term visitors to Australia. Cultural relations prosper with, for example, tours to the Netherlands by performers such as the Australian Chamber Orchestra, participation in tri-centenary celebrations of Dutch exploration of Western Australia and the reproduction of the 17th century Dutch vessel "Batavia" which sailed into Darling Harbour in 2000.

20 IJBURG – INSPECTION OF LAND RECLAMATION PROJECT

BACKGROUND AND INSPECTION

20.1 The delegation inspected the land reclamation project in the IJsselmeer (Lake IJssel), for the creation of the new district of IJburg within the city of Amsterdam, at the IJburg visitors centre.

20.2 Following a referendum in March 1997, the city of Amsterdam has begun to develop plans for the new district of IJburg. It involves the cleanup of land contaminated by the dumping of domestic and chemical waste in the 1960s and 1970s and the reclamation of land from parts of the old sea dike, polders, canals and IJmeer. Eighteen thousand homes for 45,000 inhabitants will be constructed together with shops, schools, office and other amenities. IJburg will be an archipelago in which each island has its own characteristic spatial organisation and infrastructure.

20.3 Features of the development include a global urban development plan for the layout of the islands, their interconnectedness with each other and harmonisation between the land and the water, lots of public space, good public transport, a waste water plan and ensuring the natural values of the area are retained.

20.4 Of particular interest was the waste water plan. The Water Management and Sewerage Department has drawn up a water plan for the islands. The quality of the inland water must be at least as good as that of the open water. Surplus inland water can then be discharged into the open water.

20.5 To achieve a high water quality, at least 25% of the banks along the inland waters must be given a green and/or soft edge and 2% of the watercourses must be implemented as shallow zones. Building material with a negative influence on the water quality will not be used.

20.6 On the streets with most traffic, rainwater is to be drained off through a sewer system with improved separation. In the avenues and the access roads, the rain water will first be cleaned by passing through water infiltration systems before it is discharged into the groundwater or the surface water.

20.7 The project is the outcome of a new form of public–private consultants which has led to a sort of provisional contract with the parties undertaking what they are good at: the public sector doing the reclamation and the infrastructure and the private sector drawing up the urban design within the parameter set up by the city. Work commenced in 1998 and will be completed in 2012.

21 GREENPEACE INTERNATIONAL

PARTICIPANT

21.1 The delegation was briefed by Mr Harry Lehmann, Director of the Solutions and Innovations Unit of Greenpeace International.

BRIEFING

♦ Greenpeace International

21.2 Greenpeace states that it is an independent campaigning organisation which uses non-violent confrontation to expose global environmental problems and to force solutions towards a green and peaceful future. It began in Canada in 1971 with a goal to ensure the ability of the earth to nurture life in all its diversity.

21.3 Greenpeace has as its core values:

- Independence – not accepting money from governments, corporations or political parties because it would compromise its core values; and
- Non-violent direct action – strongly believing that violence in any form is morally wrong and accomplishes nothing.

21.4 Greenpeace operates in the Quaker tradition of "bearing witness" philosophically and tactically protecting to raise awareness and bring public opinion to bear on decision makers. Whilst best known for its non-violent actions and public protests Greenpeace also employs other strategies:

- together with international experts, conducts scientific, economic and political research into the cause and effects of environmental pollution;
- lobbyists, political and corporate campaigners regularly meet with governments and industry to ensure environmental considerations are factored into every level of decision making;
- media and communications team to get the word out to have its voice heard around the word; and
- forming partnerships with other NGOs.

♦ Desalinisation Project

21.5 The delegation was advised that the Solutions and Innovations Unit has four goals: influence discussion on issues; research and development; conduct policy work; and help other campaigns. In regard to research and development the Solutions team spends 50% of its budget on research. One project amongst about 30 is the desalinisation of water.

21.6 Desalinisation of water was chosen as a project as water effects many issues and has the potential to earn revenue. Complex solutions already exist but after conducting workshops a prototype solar powered desalinisation machine has been developed. It has the capacity to turn salty, brackish and polluted water into water for human consumption at a rate of one cubic metre per day. It is designed for easy assembly to be used in remote and rural locations for individuals in developing countries. Ironically salt needs to be added to the distilled water to make it potable. The machine is being tested in three different places. It is based on the same technology (revers osmosis) as bigger evaporation systems in Teneriffe (Spain) and Oman. Unfortunately the 50% of the world that has water problems doesn't have the money to pay for the solutions.

♦ **Other Issues**

21.7 Mr Lehmann also briefed the delegation on the general land and water management issues of interest.

- groundwater in Europe will be contaminated within ten years due to seepage from waste dumps;
- prevention of erosion;
- using only drip irrigation methods;
- using fewer heavy vehicles;
- encouragement of biodiversity, including within agricultural products and vegetables;
- giving back to nature; and
- education in land management.

22 WATERLANDEN WATER BOARD

PARTICIPANT

22.1 The delegation was briefed by Mr Klause Meijer, Director of the Waterlanden Water Board, on the polder system and water management by water boards. The delegation was then taken on an inspection of the polders, drains, dikes, canals, locks, flood barriers and various pumping stations and monitoring equipment of the Waterlanden Water Board district, north of Amsterdam in the province of Noord Holland.

BRIEFING AND INSPECTION

♦ The Polder System

22.2 A polder is a parcel of land which has been reclaimed form water, lakes and marshes. The land is below sea level (15% of the Netherlands is below sea level) and a system of dikes which have been built up over hundreds of years protects the land from flooding by both the sea and rivers. The excess rainwater therefore has to be pumped out into a system of basins and canals which are graduated in height above the land until pumped out beyond the outer dike and eventually flows into the sea.

22.3 This was originally done by buckets or scoop wheels powered by hand and horse until the invention of mills harnessing the wind. Nowadays, diesel and electric pumps are used with sophisticated equipment which monitors water levels and rainfall levels to ensure water is pumped out at appropriate levels to prevent flooding and does not overload the capacity of the canals.

♦ Water Boards

22.4 Water Boards are instruments of government. They are independent and have their own areas of authority. They can draw up regulations which the public must observe and they can levy taxes. A water board has only one concern: the water management of a given area.

22.5 The water boards are charged with the following tasks:

- water control – protection against flooding by means of dunes, dikes and canals;
- water quantity – managing the amount of water and ensuring that it is kept at the right level;
- water quality – combating water pollution and improving the quality of the surface water; and
- management of inland waterways and roads.

22.6 Water boards are not responsible for drinking water. Water supply companies are responsible for this.

22.7 Tasks can vary from water board to water board. Increasing numbers of "all in" water boards, which combine the various tasks including groundwater, are being formed as a result of mergers. This is so that the so called water systems and water chains are integrated and sustainable. These integrated water management activities, take account of the relationship between water management, environmental management, town and country planning and nature conservation as far as possible.

♦ Waterlanden Water Board

22.8 Waterlanden Water Board covers 100,000 acres with a population of 300,000 north of Amsterdam. The board is a democratic body with 30 members – 10 members each elected by: farmers; property owners; and, residents. Its main task is to "keep peoples feet dry". It also maintains 500 kilometres of roads, 300 kilometres of dikes and 90 pumping stations. There are 35 different polders ranging in size from 100 acres to 15,000 acres. The first land reclamation of 60,000 acres in the district took place in 1612 and was then financed by 112 of the richest families (Amsterdam merchants) in Holland as an investment to drain lakes for farmland.

22.9 The Board has an executive of six and staff of 90. It sets its own levy rates and has a recurrent and capital budget of NLG38 million per annum. Beyond 2002 it is looking at amalgamating with five other water boards in the region.

22.10 The delegation inspected the Buiksloter Dike pumping station which was built in 1986 next to the previous pumping station which from 1874 was steam driven, from 1908 gas powered and from 1924 electric. It has a computer system to monitor and record water and rainfall levels. The pumping capacity of the station is 700 cubic metres of water per minute or can cope with 15mm of rainfall in 24 hours. There would be a problem if there was more than 60mm of rain in five days.

22.11 Pumping is done mainly overnight and weekends as power rates are cheaper then. However, pumps switch on automatically if water levels rise.

22.12 The delegation also inspected various polders, locks and dikes (including the second most low lying place in Holland where in 1916 a dike collapsed). There are no fences as drains keep cattle on their respective farms. There is a state owned meadow for bird nesting and for farmers to agist cattle. The Board has also built environmental areas to protect bird habitat in the wetlands. Dutch elms are also being planted to replace poplar trees. Windmills were last used to pump out water in 1960 and in any case could not be used in strong winds.

23 BELGIAN CHAMBER OF REPRESENTATIVES

PARTICIPANTS

23.1 Mr Pierre Jirikoff of the Protocol Office and Mr Stefan van den Jeuplic, Deputy Adviser, Legal Advisings, Chamber of Representatives met the delegation. Mr Jirikoff gave the delegation a tour of the building and brief history of Belgium and Mr van den Jeuplic briefed the delegation on the Federal Parliament.

TOUR AND BRIEFING

♦ Tour of Building

23.2 The delegation was taken on a tour of public areas of the "Palace of the Nation". The building, located opposite the Royal Palace is of neo-classical style and was built in 1779 during the reign of Empress Maria-Theresia of Austria for the Sovereign Council, the highest legal and administrative institution of the Duchy of Brabant.

23.3 After the revolution of 1830, the Provisional Government (the first Belgian Government) and the National Congress (the elected assembly which adopted the Constitution) used it for their meetings.

23.4 The Chamber of Representatives and the Senate have met at the Palace of the Nation since 1831. The plenary session hall of the Chamber was completed in 1817 and for the Senate in 1849. The Members' House was completed in 1987. It houses the offices of the members of parliament, rooms for political groups, restaurants and visitor rooms.

23.5 The delegation inspected the foyer (with statues of kings), the corridor with busts of former Prime Ministers, the Reading Room and the Chamber (which has electronic voting and features a division "scoreboard" of ayes, noes and abstentions).

♦ History of Belgium

23.6 Belgium is a union of mainly two linguistically and culturally distinct peoples: the Dutch speaking Flemish and the French speaking people of Wallonia and Brussels. There is also a small German speaking region in the east which is of equal status. Modern Belgium has existed since 1830 when a union of Catholics and liberals rebelled against King William 1 of the Netherlands. Belgium is a constitutional monarchy with King Albert II (who acceded in 1993) as head of state.

23.7 Belgium became a federal state in 1995 as part of a long process of devolution forced by continued tensions between the French and Dutch speaking groups. The 1995 agreement devolved many economic powers to the regional governments (Flanders, Wallonia and Brussels) with directly elected governments. The country was also divided into three linguistic communities and community councils were established to govern education and other "cultural" issues. The Belgian Government's institutional reform program on devolution was put to Parliament in 2001. Proposed reforms include devolution to the three regional governments of agriculture and foreign trade responsibilities as well as greater fiscal autonomy and a restructuring of finances of the

linguistic communities. The Federal Agriculture Ministry as a result be abolished in January 2002.

♦ Federal Parliament

23.8 Federal responsibilities are the Constitution, institutional and general legislation, national defence, justice, social welfare, monetary policy, economic regulations, external relations and public security. The federal legislative authority is exercised collectively by the King, the Chamber of Representatives and the Senate. Legislative elections (the Chamber and the Senate) are held every four years. The Federal Government consists of the Prime Minister, seven French speaking ministers, seven Dutch speaking ministers and the secretaries of state.

23.9 The Federal Parliament consists of the Chamber of Representatives consisting of 151 deputies directly elected on a proportional representation basis from 20 constituencies (each based on population). The largest constituency is based on Brussels which returns 22 deputies and the smallest only two. The Senate consists of 71 senators plus the heirs to the throne: 40 senators are directly elected, 20 senators appointed by the community councils, 10 senators are coopted and one senator is German.

23.10 In terms of legislation under the constitution:

- the Chamber alone is responsible for: budgets, army quotas, naturalisation and laws relating to the civil and penal responsibility of federal ministers;
- the Chamber and the Senate are responsible for: revision of the Constitution; legislation relating to the structure, workings and institutions of the State; international treaties. Both deputies and senators can submit private member's bills and examine government bills;
- for other laws the role of the Chamber is decisive, the Senate being a review assembly: the Senate may call up and examine bills submitted to the Chamber and may propose amendments. It may also forward its own private member's bills to the Chamber. The Chamber always has the final word; and
- a parliamentary committee governs the relation between Chamber and Senate.

23.11 In their work the Chamber controls the Government. The Government needs the confidence of the majority of the members of the Chamber. The Chamber has the following means to control government policy: examination of budgets, interpellations, questions and committees of inquiry.

23.12 The Senate has a consulting role. It gives its opinion on conflicts of interest between the Federal Parliament and the Community and Regional Assemblies. In order to avoid conflicts of interest, the various state authorities are bound to observe federal loyalty.

23.13 The work of the Federal Parliament is in the following cycles:

- after each election the members of the parliament take the oath, form political groups, and prepare in committees the plenary sessions;
- at the beginning of each parliamentary year (the second Tuesday of October), the

Chamber and the Senate each elect their President and Bureau;

- the organisation of parliamentary activities is prepared for the Chamber by the Conference of Presidents, and for the Senate by the Bureau; and
- the questors to the Chamber (six MPs) and Senate (three MPs) are charged with all the material matters of their assembly.

24 ENVIRONMENT DIRECTORATE-GENERAL – EUROPEAN COMMISSION

PARTICIPANTS

24.1 Dr Helmut Blöch, Head of Water Protection and Water Management, Mr Armondo Astudillo Gonzalez and Mr Michael Hamell of the Environment Directorate-General, European Commission. Also in attendance, Ms Janaline Oh, Counsellor, Australian Embassy.

MEETING AND DISCUSSION

♦ EU Water Framework Directive

24.2 Dr Blöch briefed the delegation on the background to and the key features of EC Directive 2000/60 of 23 October 2000 establishing a framework for EC action in the field of water policy.

24.3 The first item of the preamble to the directive states: *water is not a commercial product like any other but rather, a heritage which must be protected, defended and treated as such*.

24.4 European water legislation began, with standards for rivers and lakes used for drinking water abstraction in 1975, and culminated in 1980 in setting binding quality targets for drinking water. It also included quality objective legislation on fish waters, shellfish waters bathing waters, and ground waters. Its main emission control element was the Dangerous Substances Directive.

24.5 Following a 1988 ministerial seminar on water, existing legislation was reviewed and resulted in a second phase of water legislation:

- the Urban Waste Water Treatment Directive, providing for secondary (biological) waste water treatment, and even more stringent treatment where necessary; and
- the Nitrates Directive, addressing water pollution by nitrates from agriculture.

24.6 Other directives followed:

- a new Drinking Water Directive, reviewing the quality standards; and
- a Directive for Integrated Pollution and Prevention Control.

24.7 Further pressure led to the EC to develop a new water policy in an open consultative way involving all interested parties to address their concerns. The issue was formally addressed to the Council and the European Parliament, which at the same time invited comment from all interested parties, such as local and regional authorities, water users and NGOs. A score of organisations and individuals responded in writing, most of the comments welcoming the broad outline given by the Commission.

24.8 At the culmination of this open process the Commission hosted a two day Water Conference in May 1996. This Conference was attended by 250 delegates including representatives of Member States, regional and local authorities, enforcement agencies, water providers, industry, agriculture and, consumers and environmentalists.

24.9 Following this consultation process the Commission presented its proposals and the Water Framework Directive was adopted in October 2000 with the following main objectives:

- expanding the scope of water protection to all waters, surface waters and groundwater;
- achieving "good status" for all waters by a certain deadline;
- water management based on river basins;
- "combined approach" of emission limit values and quality standards;
- getting the prices right;
- getting the public involved more closely; and
- streamlining legislation.

LIST OF PUBLICATIONS

24.10 The delegation received the following publications for reference:

- EU Focus on Clean Water; and
- Directive 2000/60/EC of 23 October 2000 establishing a framework for community action in the field of water policy.

25 FLEMISH PARLIAMENT

PARTICIPANTS

25.1 Mr Kris Van Esbroeck, Executive Director, and Mr Wilfred Van Vinckenraye, of the External Relations Department, Flemish Parliament, met the delegation and conducted a tour of the Parliament building and briefed the delegation on aspects of the Flemish Parliament.

CALL ON THE FLEMISH PARLIAMENT

♦ Tour of the Building

25.2 The delegation was taken on a tour of the Flemish Parliament building which was official opened in March 1996. It is a spectacular renovation of a building which was once an old hotel and most recently the headquarters of the Postal Ministry. The building combines conservation with the incorporation of steel and glass. The highlight feature is the Domed Hall (made of glass) where the plenary meetings of the parliament are held. The glass symbolises transparency in decision making. The building also incorporates contemporary Flemish works of art. The building has 200 visitors a day.

♦ Flemish Parliament

25.3 Elections for the Flemish Parliament are now held every five years. They are held on the same day as the elections for the European Parliament. The members of the Flemish Parliament were elected for the first time on 21 May 1995. The last elections were held on 13 June 1999.

25.4 The Flemish Parliament has 124 members:

- 118 members are directly elected in 11 electoral constituencies of the Flemish Region.
- six seats are reserved for the first six elected Dutch speaking members of the Brussels-Capital Regional Parliament. The members in question thus sit in two parliaments. In the Flemish Parliament they only vote on community matters. They do not participate in votes on regional matters.

25.5 There are eleven constituencies for the elections of the Flemish Parliament. They correspond to those for the elections of the House of Representatives but the number of the seats to be distributed is obviously different.

25.6 The Flemish government is elected by the Flemish Parliament. It also gives it its investiture. The parliament can only force the government to resign in certain well defined circumstances through “motions of constructive disapproval”. A motion of disapproval is passed when the government no longer has the confidence of the parliament. It is called constructive because the parliament must immediately propose a new government.

25.7 Although not the case at the federal level, the parliament may force an individual member of government to resign without the continuation of the entire government being jeopardised.

25.8 The Flemish Parliament passes decrees. These decrees have the same force of law as federal laws but only apply within the Dutch speaking language region as well as to certain Brussels institutions.

25.9 The budget for the Flemish Region and Flemish Community is divided up roughly as follows:

- education and scientific research – 44%
- "social" expenses – 10%
- local administration management – 10%
- civil engineering – 8%
- employment – 7%
- environment – 5%
- public authority works – 5%
- financial management – 5%
- culture – 4%
- council houses policy (social houses) – 2%

25.10 Income is 89% from federal authorities; 9% from its own taxes; and 2% other income. In 1998, the budget was balanced.

25.11 The Flemish government numbers a maximum of 11 members. At least one minister must reside within the bilingual Brussels-Capital Region.

25.12 The members of the government take their oath before the President of the Parliament. The President takes his oath before the King. The President of the Flemish government is called the "Minister-President".

25.13 The current government has nine members. It is a four party coalition.

25.14 The Flemish government employs about 35,000 administrative staff.

26 AGRICULTURE DIRECTORATE-GENERAL – EUROPEAN COMMISSION

PARTICIPANT

26.1 Ms Nelly Bandarra-Jazra, Rural Development Directorate, Agriculture Directorate-General, European Commission met the delegation to discuss agricultural policy reform and its implications.

MEETING AND DISCUSSION

♦ Agriculture Directorate-General

26.2 The European Commission's Agriculture Directorate-General [DG] is based in Brussels and is responsible for the implementation of agriculture and rural development policy, the latter being managed in conjunction with the other DG's which deal with structural policies. It is made up of eleven directorates dealing with all aspects of the Common Agricultural Policy [CAP] including market measures, rural development policy, financial matters, environment and forestry policies as well as international relations relating to agriculture. Ms Bandarra-Jazra works in the Rural Development Directorate.

♦ Common Agricultural Policy

26.3 The Treaty of Rome which created the European Economic Community in 1957 contained provisions for a CAP. This policy sought to increase the productivity of European agriculture, ensure reasonable living standards for farmers, stabilise farm produce markets and guarantee a stable food supply at fair prices for consumers.

26.4 The key principles underpinning the CAP are:

- single markets (guaranteeing free trade between the community's member states);
- community preference (priority for the community's agricultural products, without stopping the flow of imports from countries outside the community); and
- financial solidarity (a common agricultural budget under the CAP).

26.5 After the initial successes of the CAP, in the 1970s with technological progress, substantial surpluses began to appear which resulted in mounting stocks of produce and a surge in agricultural spending. CAP has thus been amended over the years to modify price policy, restricting market intervention, regulating output and introducing a system to control spending on agriculture. Measures were also added to stimulate development in rural areas: training for farmers, financial assistance for the youngest farmers, investment in modernising farm holdings and even a special program to assist less favoured and mountain areas.

26.6 In the 1990s a more radical overhaul of the CAP was called for: market management was adjusted to restore market balance, and more assistance was provided for social and environmental measures. Support prices were reduced, with the impact on farmers'

income being cushioned by new, direct compensatory payments. The result was that surpluses fell, markets returned to balance and community prices began to move towards world levels, while farm incomes on the whole improved.

26.7 However, it became apparent that agricultural products within the community needed to be more competitive in terms of price and quality, consumers' expectations were growing, and it was imperative to provide adequate protection for the environment.

♦ Current Developments – Forestry

26.8 Stemming form the 1992 reforms of the CAP the relationship between agriculture and the environment (and economics) has become one of "sustainable agricultural development". Thus, management of natural resources in a way which ensures that their benefits are also available for the future. The agricultural sector performs its tasks with a view to the protection, preservation and improvement in the quality of water, air and soil, in the abundance of biodiversity and preservation of the landscape.

26.9 The bottom line was marginal farmers that were not competitive converted to forestry or entered a retirements scheme as a way for them to get out of less productive land with dignity.

26.10 Some member states are making finance available to fund large scale irrigation works to farm marginal land. This inappropriate expansion of irrigation onto land not suited to irrigation is a problem. In some areas of Spain salinisation has become a problem as a result.

26.11 This directorate is encouraging the policy of stopping irrigation and finding alternate uses for the marginal land or at least to irrigate more rationally or plant something more suitable. It is also encouraging rural development programs for farmers to set land aside for the sustainable development of manageable forests. Fifty to 75% subsidies are being given to finance forestry programs to cover the cost of investment, income replacement and property maintenance. Subsidy arrangements are for up to 20 years so farmers are looking at fast growth forests. Farmers are also encouraged to have a diversity of species (pines, oaks and maples) as well as associating with each other to obtain economies of scale. Waste water can also be used to water the trees.

26.12 The forestry program has assisted in stabilising the decline and in places lead to the regeneration of some forests. There are 4,000 monitoring stations to measure the condition of forests in Europe. The conditions of forests in turn are indicators of air pollution and other eco-stresses.

LIST OF PUBLICATIONS

26.13 The delegation received a copy of a technical report "Forest Condition in Europe: results of the 1999 crown condition survey".

27 WWF (FORMERLY WORLD WILDLIFE FUND FOR NATURE)

PARTICIPANTS

27.1 The delegation met with Ms Elizabeth Guttenstein, European Agriculture and Rural Development Policy Officer and Ms Eva Royo Gelabert, European Water Policy Officer, of the WWF. Also in attendance Ms Janaline Oh, Counsellor, Australian Embassy.

MEETING AND DISCUSSION

♦ WWF

27.2 WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:

- conserving the world's biological diversity;
- ensuring that the use of renewable natural resources is sustainable; and
- promoting the reduction of pollution and wasteful consumption.

27.3 Since it was founded in 1961, WWF has become one of the world's largest and most effective independent organisations dedicated to the conservation of nature. When it started, WWF's work consisted mainly of protecting animals and plants threatened with extinction because they are part of a complex chain in which the disappearance of even a single species can have far reaching consequences.

27.4 Since then, the scope of WWF work has broadened. WWF also tackles the many forms of pollution that are harming the soil, atmosphere, freshwater and oceans. WWF now operates in around 100 countries, supported by nearly five million people worldwide and is a leading agent taking action to protect the environment for people and for nature.

27.5 Its office in Brussels works to influence the policies and activities of the EU. It also has an office in Washington which works to influence global institutions involved in international economic issues, like the World Bank.

♦ EU Water Framework

27.6 A example of WWF influencing EU activities was the series of three "water and agriculture" seminars organised by the WWF with support from the EC designed to identify tools and approaches to promote the effective implementation of the EU Water Framework Directive.

27.7 From the seminars, the fundamental elements of the Water Framework was established and not changed significantly after presentation by way of a seminar to the Agriculture and Environment Directorate Generals of the EC.

27.8 At the seminar many scientific papers were presented on the links between agriculture and water quality and quantity (refer to list of publications below). The conclusions

from the seminar demonstrates the interconnectedness of the various tools and strategies used in the policy area of agriculture and water.

♦ **Salinity**

27.9 One of the papers (E. Sequeira) wrote of irrigation having severe consequences for both the quality of soils and of water resources, particular intensive agriculture using irrigation based on a system of cascading dams. It increases the risk of both soil salinisation and sodisation as well as degrading water quality. As the salt content of water used for irrigation will determine the quantity of water that must be used for leaching purposes to avoid the build up of salts in the root zone. The higher the salinity the higher the quantity of water which must be used.

27.10 Accordingly WWF is pushing for further reforms particularly in water pricing and agricultural reform to encourage sustainable agriculture so as to minimise the damage to the environment. An example referred to was the EU unsustainable policies for olive farming.

27.11 WWF also encourage the rational use of water within the market framework. They were critical of the Spanish National Hydrological Plan to take water from one catchment to another to irrigate already saline land. The slogan of the plan was "not a drop of water should be wasted into the sea".

LIST OF PUBLICATIONS

27.12 The delegation received the following publications for reference:

- Implementing the EU Water Framework Directive: Proceedings on Seminar – Water and Agriculture, Brussels 10 and 11 February 2000;
- Implementing the EU Water Framework Directive: Synthesis Note on Seminar 1 – Water and Agriculture, Brussels 10 and 11 February 2000;
- EU Policies for Olive Farming: Unsustainable on all counts;
- The CAP and environmental Cross Compliance in Spain: Practical and application in Las Tablas de Daimiel; and
- Water and Wetland Index: Assessment of 16 European Countries – Phase 1 Results, April 2001.

28 AUSTRALIAN EMBASSY – BRUSSELS

PARTICIPANTS

28.1 Her Excellency Joanna Hewitt, Australian Ambassador to Belgium and to the European Union briefed the delegation on Australia-Belgium relations and Australia's relations with the European Union. Also in attendance, Ms Janaline Oh, Counsellor, Australian Embassy.

MEETING AND DISCUSSION

♦ Australian-Belgium Relations

28.2 Australia enjoys positive and constructive relations with Belgium and the bilateral commercial relationship is growing. The countries share similar approaches to many international issues, including arms control, disarmament and Antarctica.

♦ Australia's Relations with the European Union

28.3 Australia has longstanding and close historical ties with many of the countries of the EU. The relationship includes diverse trade and investment links as well as more traditional people to people cultural ties. Formal links between the Australian Government and the EU's executive arm, the European Commission, are also strengthening with a number of bilateral agreements and understandings now in place to the mutual benefit of Australians and Europeans.

28.4 The broadening of Australia's bilateral relationship with the EU partly reflects the continuing pace of EU integration, the strong and increasingly diverse trade and economic relationships and increasing recognition by many European countries of Australia's position in the Asia-Pacific region.

28.5 One of the roles of the Embassy is to monitor directives and advise of its relevance to Australia. Ms Oh advised that Australia tends to take EU compliance standards more seriously than some of the member states.

♦ Trade and investment

28.6 Australia's trading relationship with the EU in both merchandise and services continues to expand and diversify every year. Unprocessed primary products (particularly wool, coal and copper, nickel and iron ores) continue to dominate Australia's exports to the EU, although exports of elaborately transformed manufactures (eg. wine, transport equipment, medicaments, computer and electrical equipment) and services (eg. travel, transportation and shipment) have grown strongly over the past decade and with good potential for further growth. However, market access restrictions and subsidies are significant but these issues are much less significant in the case of manufacturers and services.

28.7 The EU is Australia's largest merchandise trading partner. The EU is Australia's largest source of merchandise imports (mainly medicaments, passenger motor vehicles, telecommunications equipment and aircraft and parts).

28.8 Bilateral trade in services is also growing strongly with the EU being Australia's largest overseas market for services with exports worth A$6.3 billion in 2000. As a source of imported services, the EU again ranks first, with A$7.2 billion worth of services imported in 2000.

28.9 The EU is the largest source of foreign investment in Australia. In addition, the EU is the second largest foreign destination for Australian investors, with investment totalling A$73.9 billion at end June 1999.

28.10 The passing comment was made that WWF are a beacon of NGOs for agricultural reform in the EU. The reforms are also helpful for Australia.

APPENDIX – ITINERARY

Monday 4 June 2001

The delegation arrives in New Delhi.

Tuesday 5 June 2001

Briefings by officials of the Australian High Commission.

Briefing by Assistant Country Manager, South Asia Australian Centre for International Agriculture Research.

Meeting and discussion with the Secretary and other officers of the Indian Ministry for Water Resources.

Meeting and discussion with officials of the World Bank.

Meeting and discussion with officers of the Aga Khan Foundation.

Wednesday 6 June 2001

Meeting and discussion with the Joint Secretary and other officers of the Indian Ministry of Agriculture.

Call on the Parliament of India.

Meeting and discussion with officers of the Society for the Promotion of Wasteland Development.

Thursday 7 June 2001

Call on the Rajasthan Legislative Assembly, Jaipur.

Meeting and discussions with the Secretary and other officers of the Rajasthan Department of Irrigation and Command Area Development and the Chief Engineer (Rural) and other officers of the Rajasthan Department of Public Health Engineering.

Call on the Secretary of the Rajasthan Legislative Assembly.

Friday 8 June 2001

Meeting and discussion with Executive Director of the Association for Rural Advancement through Voluntary Action and Local Involvement, Jaipur.

Monday 11 June 2001

The delegation arrives in Copenhagen.

Tuesday 12 June 2001

Call on the Folketing (Danish Parliament).

Briefing by the Australian Ambassador.

Reception hosted by the Australian Ambassador.

Wednesday 13 June 2001

Meeting and discussion with officers of the European Environment Agency.

Meeting and discussion with officers of the Danish Ministry of Environment and Energy.

Thursday 14 June 2001

The delegation arrives in Amsterdam.

Meeting and discussion with Professor Brouwer of the Department of Land and Water Management University of Technology, Delft.

Friday 15 June 2001

Meeting and discussion with officers of the Ministry of Transport, Public Works and Water Management, The Hague.

Briefing by the Counsellor, Australian Embassy.

Sunday 17 June 2001

Inspection of land reclamation project in the new municipality of IJburg, Amsterdam.

Monday 18 June 2001

Meeting and discussion with the Director of the Solutions and Innovations Unit of Greenpeace International, Amsterdam.

Inspection of the polder system, Noord Holland.

Tuesday 19 June 2001

The delegation arrives in Brussels.

Call on the Belgian Chamber of Representatives.

Wednesday 20 June 2001

Meeting and discussion with officers of the Environment Directorate General of the European Commission.

Call on the Flemish Parliament.

Meeting and discussion with an officer of the Agriculture Directorate

General of the European Commission.

Thursday 21 June 2001

Meeting and discussions with officers of WWF (formerly known as the World Wildlife Fund for Nature).

Briefing by the Australian Ambassador.

The delegation departs Brussels to return to Sydney.