Ramsar Convention Monitoring Procedure

Report No. 15: Ichkeul, Tunisia

Background

1. Document C.3.6, presented to the Conference of the Contracting Parties at Regina, Canada, in June 1987, mentioned 29 wetlands of international importance on the Ramsar List where changes in ecological character 'have occurred, are occurring or are likely to occur'. On the basis of this document and of Regina Conference Recommendation C.3.9, the Ramsar Standing Committee established a 'Monitoring Procedure', which enables the Ramsar Bureau to work closely with the Contracting Party or Parties concerned, with the aim of preventing such changes of ecological character at Ramsar sites.

2. Report No. 3 under the Monitoring Procedure was drawn up by M Smart, following a visit to Ichkeul in April 1988. During 1989, he has made three further visits to Ichkeul: from 22 January to 3 February, to assist in establishing the exhibition in the Ecomuseum (organized by IWRB and Direction General des Forêts with financial assistance from Unesco, WWF, and USFWS); from 5-10 September (financed by Ramsar and in the company of Dr G E Hollis of University College London (UCL)) to attend coordination meetings on Ichkeul, organized by the Tunisian National Agency for the Protection of the Environment; and from 16-22 December (once again in the company of Dr G E Hollis, and with finance from the Ramsar budget and the long-term research project on Ichkeul which is financed by DG XII of the Commission of the European Communities, to attend further coordination meetings organized by the Agency. In addition Dr Hollis visited Ichkeul from 20 to 27 January and from 3 June to 10 June as part of the EC research project on Ichkeul, carried out by UCL, in collaboration with Dr A Tamisier of CNRS France, and Sogreah consulting engineers of Grenoble, France. Other members of the research team (notably Dr Jocelyne Hughes, Messrs Fethi Ayache, Chris Howe and David Thomas) have in the course of the last two years been working at Ichkeul, and the present report, written by GEH and MS, takes account of their findings, as well as the extensive material provided by the Tunisian authorities, in particular the ANPE, and various departments of the Ministry of Agriculture, the DG Forêts, the Direction de Resources en Eau, the Direction Générale de la Génie Rurale and the Direction des Etudes des Grands Travaux Hydrauliques.

3. It should be recalled that the principal recommendations of Monitoring Report No 3 (April 1988) were as follows:

(a) above all the sluice on the Oued Tindja should be completed;

(b) operating rules for the sluice, giving a major role to the National Park authorities, should be developed;

(c) technicians to operate these rules should be trained;

(d) the canals in the Joumine and Melah marshes should be filled in as soon as possible;

(e) the Ecomuseum should be opened by February 1989.

Ichkeul - the current situation

4. **Environmental awareness**: The level of interest in Ichkeul - in government and public circles in Tunisia - is higher than it has ever been. There are frequent discussions in the media, and government officials made it clear that development of a management system, which will maintain the ecological character while allowing use of some of the water resources, is Tunisia's highest environmental priority. This much increased recognition of the importance of Ichkeul and its resources is the major development, and is greatly to be welcomed.

5. Two factors played a particularly important role in heightening this consciousness: the severe drought, which affected even northern Tunisia in winters 1987/88 and 1988/89, reduced agricultural yields in this, the most fertile part of the country, to only 25% of the average; secondly, following a review by the Frankfurt based Kreditanstalt für Wiederaufbau (Kfw) Bank, the Federal Republic of Germany blocked finance for a pipeline carrying water from the Sejenane Dam to the existing pipeline linking the Joumine Dam to Tunis.

6. The two successive dry winters limited the supply of water for irrigation, reduced groundwater levels and hence adversely affected agricultural production around the Ichkeul wetland. Within the National Park, the salinity of the lake remained high, preventing growth of Potamogeton - the principal food of several species of wintering waterfowl; the marshes were not flooded (and the Joumine and Melah canals only exacerbated this situation), leading to further desiccation and restriction of the growth of Scirpus, the principal food of wintering geese. (Happily, winter 1989/90 has so far been much wetter, and if there is average rainfall in January and February 1990, the situation should improve further). Nevertheless, little is known about the ability of the ecosystem, and particularly the vegetation, to recover after two extremely dry winters, exacerbated by the effect of dams; (the monitoring done by the EC project will be of special relevance here).

7. The decision by the Federal Republic of Germany, following review by the Kfw bank, not to finance the Sejenane-Joumine pipeline was all the more influential in that it was not expected, interim permission having been given to put the work out to tender. The pipeline is needed to allow water from the Sejenane dam to be channelled into the water supply system and mixed with that from the Joumine dam before being piped away to Tunis, Cap Bon and the south of Tunisia. Kfw felt that the works planned did not take sufficient consideration of the impact on the National Park, and the surrounding agricultural land, of withdrawing such a large proportion of the original water supply. It is understood that, following the new concern for environmental equilibrium and the new policies adopted by the Tunisian government, the funding for the pipeline has now been released by the government of the Federal Republic of Germany.

8. **The National Agency for Environmental Protection and the international seminar.** The greater level of environmental consciousness was demonstrated by the establishment of the National Agency for Protection of the Environment (ANPE), a governmental body attached directly to the Prime Minister's office. It originally appeared that the Agency's role would be concerned largely with prevention of pollution, notably in industrial complexes. However, one of the Agency's first acts was to organize an expert seminar on Ichkeul in February 1989. Subsequently the President of the Republic and the Prime Minister entrusted the head of the ANPE, Mr Noureddine Kamoun, with the task of holding a larger

international seminar on Ichkeul in February 1990. In the letter of invitation to this seminar, Mr Kamoun emphasized “the Tunisian authorities’ new policy on development, which consists in taking real and practical account of ecological and environmental aspects”. The Agency has been entrusted with “coordination of actions necessary to ensure the preservation of Ichkeul National Park, vis-à-vis development activities in the region”. It will of course work closely with the national and regional authorities concerned with Ichkeul, and in particular the Direction Générale des Forêts of the Agricultural Ministry.

9. During discussions with experts invited to prepare the 1990 seminar in September and December, Mr Kamoun emphasized that a very broad vision should be taken of Ichkeul and its catchment. The original “solutions”, involving infilling and restriction of the surface of the lake by a causeway through the centre, had been tentatively advanced within the “straitjacket” of the Plan for the utilization of the waters of the North, which projects building of six dams on inflow rivers. Two of these dams have been completed and a third is under construction (see para 11 below); the international seminar should however review the conservation and wise use of natural resources (including water, grazing, fisheries, tourism, wildlife and heritage values) without this straitjacket and could recommend the cancellation of the last three dams. There is already a much greater willingness on the part of the water supply authorities to contemplate release of water from the dams. The possibility of water from a seventh proposed dam, Sidi Barak, on the Oued Zouara immediately to the west of Ichkeul catchment, being earmarked for Ichkeul is widely discussed. The cost/benefit ratio of irrigated areas needs to be critically assessed in the light of recent research findings. These showed that in the Ghezala irrigation area, the only one so far completed around Ichkeul, there would be a financial loss for every cubic metre of water used, even given the most optimistic forecasts of production. The actual production was shown to be far short of that projected and socio-economic constraints had not been fully incorporated into the planning of the scheme. The management and use of water stored by the dams needs to be reviewed. Even in the severest months of the drought, no restrictions were placed on urban water supplies since the philosophy was that all demands, save irrigation, must be satisfied. Such a policy is no longer accepted in most European countries concerned to balance financial and environmental costs of demand-led water planning. The seminar will be essentially a meeting of the best available experts, both international and Tunisian, on wetlands and their wise use. Funding has been promised by the Commission of the European Communities, UNDP, and the Friedrich Neumann Foundation. It is expected that, following the recommendations of the seminar, an already prepared short list of consulting engineers will be invited to tender for the studies and works to be carried out; funding for these operations is likely to be available from the Commission of the European Communities.

10. **Role of the European Economic Community.** It will be apparent from the above paragraphs that the European Economic Community is now playing a much larger, and very welcome, role in the conservation and wise use of Ichkeul and its catchment. The Commission’s DG XII has since 1982 played a major role in financing the work of the Ichkeul international research team, and governments of member countries of the EEC (notably France and the Federal Republic of Germany) together with University College London and CNRS (France) have provided financial and technical support to the team. Now, however, as a result of the increasing environmental awareness in Tunisia, the Commission’s Delegate in Tunisia, as well as other Directorates-General in Brussels (DG I, VIII, and XI in particular) have been playing a much more active role. Indeed, the Commission will be providing 145,000 ECUs toward the costs of the February 1990 seminar and 250,000 ECUs

for a range of immediate management actions within the National Park. A significant feature of the latter actions is that, after full consultation with DG of Forests, the funds will be provided to ENDA (Environment and Development in the Third World, a Dakar-based NGO) to work directly with the locally-based official in charge of the park.

11. **Development projects: dams**. The Ghezala dam (currently calculated to retain a maximum of 10.5 million cubic metres of water) and the Joumine dam (capacity of 130 million cubic metres) are now complete. The dam on the Oued Sejenane (capacity 130 million cubic metres) is under construction. Construction of the last three dams, all of relatively small capacity (Doumis 4.81 million m3, Melah 12 million m3, Tine 12-13 million m3) has not yet begun. Because of a construction error related to a geological fault, there is a permanent, but small, leakage from the Joumine dam. However this water generally does not reach Ichkeul, since it is trapped for use by local farmers between the Joumine dam and the National Park. Work on the Sejenane dam has for the moment been suspended, because of construction difficulties, change of contractor and the need to negotiate a new financial arrangement. The Ministry of Agriculture's water resource planners are currently working on proposals to construct a dam at Sidi Barak on the Oued Zouara (a separate catchment from Ichkeul). It is suggested that water might be pumped from Sidi Barak to Ichkeul, over an intervening ridge of a height of 127 metres; while technically feasible, this appears an expensive measure.

12.The existing dams were designed under Tunisian/Soviet cooperation agreements. Until now there has been little or no contact between Soviet engineers and ecologists, whether Tunisian or international. It is therefore heartening to record that Soviet engineers have approached the Tunisian official in charge of the National Park, expressing considerable interest in the seminar in February 1990, and offering to participate.

13. **Development projects: agricultural improvement in the Mateur plain**. Plans to develop agriculture in the fertile but waterlogged plains round Ichkeul have gone ahead. A series of drainage works have been carried out: these will result - as recognized by the planners - in more rapid run-off to the National Park and also, in the long run, to increased salinity in the soil, which in some areas will have to be abandoned for cultivation in 30 years. The more rapid run-off will bring more water to the National Park, but it currently flows through the Joumine and Melah canals, rather than across the surface of the marsh (see para 19 below) and there is a query over its quality: will the amount of agricultural chemicals perhaps be too high? A series of pumping-stations has been completed at the very edge of the Park in the last year to evacuate water from the agricultural land; unfortunately, the drainage ditches in the agricultural land have been dug at a level of 1.50 metres below the level of the Park, rather than 0.70 cm; there is therefore a problem of carrying the water away and of paying the cost of pumping. The Direction Générale de la Génie Rurale has therefore been reluctant to countenance infilling of the canals within the National Park, and has even suggested excavation of new canals.

14. **Development projects: expansion of Bizerta**: The ANPE is very conscious that a number of projects for the industrial, economic and social development of Bizerta and its region could affect the Ichkeul catchment - notably the Lake of Bizerta immediately downstream of Lake Ichkeul - through quantity and quality of run-off waters. The Agency has therefore requested that the seminar in February 1990 should pay special attention to this problem.

15. **Global climatic change**: The forecast changes in temperature (increase of 1½C by 2025) and sea level (rise of 20cm by 2025) will obviously affect Ichkeul and its future. In a study of Mediterranean wetlands organized by UNEP, it was estimated that the effects on the Ichkeul catchment would be as follows:

- The actual evapotranspiration in the region will increase by around 10% when mean air temperature rises by l½c. This will result in at least a 10% decline in riverflow. The salinity of the latter will rise by at least 12%. The demand for irrigation water will rise by at least 12% when reservoirs are depleted by reduced river flow and increased evaporation. The average storage in the reservoirs will fall by up to 26% and they will be nearly empty for up to 19% of the time. An expected 25% filling of the reservoirs with sediment will seriously increase the water supply problems, with mean storage falling to around 60% of the levels under present conditions. The sea level rise, acting on its own, is not likely to have a significant impact on either the Lake of Bizerta or Garaet El Ichkeul.

- The effects of the dam scheme and the rise in temperature will act together to change the ecological character of the Ichkeul National Park. Compensatory measures aimed at preventing Ichkeul becoming a saline sebkha will have to combat both the effects of the dams and global warming. The impact of global warming on bird migration and wintering areas may offset some of these deleterious trends on the waterfowl that presently use Ichkeul.

- Overall, existing environmental problems are likely to be exacerbated; agriculture will suffer; inland lagoon fisheries will be adversely affected by both the dams and global warming; sea fisheries may benefit slightly; industry will be largely unaffected; water resources will decline in both quantity and quality; transport will be unaffected save for shipping which may benefit slightly, settlements will suffer through their foundations and sewers; the quality of urban life may decline through an accelerated influx of farmers leaving the countryside; geomorphological systems will change only marginally; and the hydrology and ecology. of the Ichkeul wetland will change through both the dam scheme and the temperature change; the extent of the change will depend upon the conservation management measures implemented.

These issues of global warming and sea level rise must be kept in mind in the long-term planning of management of the Ichkeul catchment.

Action taken upon Recommendation in Monitoring Report No 3

16. **Sluice on the Oued Tindja**: Monitoring Report No 3 recommended that, above all, the building of the sluice (on the Oued Tindja between Lake Ichkeul and the Lake of Bizerta) should be completed. The sluice is a control structure, essential to control exit of fresh water in winter and inflow of salt water in dry periods. Most of the construction of the concrete portion of the structure has been completed, despite difficulties with the depth and softness of underlying mud. According to rough measurements we made on 17 December, the sluice, when closed, should retain water up to about 1.70 metres above NGT; this is entirely satisfactory. A fish pass has been included in the design, but Prof Boudouresque of Marseilles, brought in by ANPE to assist with the February seminar, has queried the likely efficacy of this structure. Unfortunately, work on the sluice has for the moment stopped. This is apparently because the first contractor could not complete the work at the agreed price. The

Tunisian government has already paid TD 420,000 for work on the sluice. The ANPE indicated that a further contribution of TD 370,000 had been made available, and that a second contractor is to be employed to complete the work. The sluice should be in working order in the course of 1990.

17. **Operating rules for the sluice**: The previous report recommended that, while the sluice was being completed, operating rules should be prepared and they should give a major role to the department responsible for the management of the park. Proposed operating procedures, following recommendations made by UCL from their hydrological studies, are currently being prepared by Sogreah under the existing EC DG XII research contract.

18. **Training for sluice operators**. The previous report suggested that training should be provided for the technician or technicians in charge of operating the sluice. In the absence of an overall management authority for the park and/or the wider Ichkeul catchment, it is not clear how or by whom the operating rules for the sluice will be applied. Indeed, it has not yet been decided which agency will actively operate the sluice or which agencies will be represented on any future management committee. The Ramsar Bureau remains ready to help with training, and could arrange immediately for the technician concerned to visit similar sluices in Europe, to learn about their operation for a week or two.

19. **Infilling of the Joumine and Melah canals**: The previous Monitoring report recommended that these two canals be filled in as soon as possible, and that mechanisms for consultations between all departments concerned with management of the park be strengthened. Regrettably, the two canals have still not been filled in: water from the Oueds Joumine and Melah is therefore flowing into the park down a deep channel, rather than spreading gradually over the whole surface of the respective marshes. As a result, these marshes, an essential element of the wetland ecosystem, have become more and more desiccated, and increasingly invaded by halophytic plants. We were informed on several occasions that a decision had been taken in principle to fill the canal. This has been strongly supported by the representatives of the European Commission who are said to have made the grant of 250,000 ECUs for the National Park conditional upon the filling of these canals. However, the reluctance of the DG Génie Rurale to fill in the canals, because of their fears of the effect on groundwater level in agricultural land in the Plaine de Mateur, has so far prevented any action.

20. **Completion of the Ecomuseum**: The Ecomuseum was opened on time on 7 February 1989 by the then Minister of Agriculture, with considerable publicity in the national news media. Among those present at the official opening were the Governor of Bizerta, senior officials of the Ministry of Agriculture and of the ANPE, representatives of the diplomatic community and of the principal non-governmental conservation organizations in Tunisia, as well as of international conservation bodies (IWRB and Ramsar Bureau). At present the Ecomuseum appears to be functioning effectively as a visitor and reception centre: numbers of schoolchildren and Tunisian visitors have been high, and during our brief visit on the afternoon of Sunday 17 December three coaches. and over fifty private cars used the car park. Nevertheless, there is scope for further development: a centre of this sophistication urgently needs trained staff, able to welcome visitors, to show them round the exhibition and the National Park; such staff should also be able to visit local schools to encourage further visits; some effort is required for upkeep and repairs, for development of brochures, teaching materials, audio-visual presentations. Thanks to a grant from the French Embassy, the BBC

film on Ichkeul is being produced in Arabic and French versions for use in the Ecomuseum (only an English version is currently available). It is encouraging to know that UNDP has promised a grant of US $300,000 to the Agency for public awareness and environmental education work, and it is hoped that some of this sum can be made available for operations at Ichkeul. The Ramsar Bureau would be happy to help organize short informational visits to appropriate centres in Europe for educational staff of the Ecomuseum.

Conclusions

21. For some years, the future of Ichkeul and its wetland values has appeared severely compromised by the plan to divert most of its water supply by the construction of six dams; this, despite the fact that it is one of the world's most widely-recognized wetlands at international level, being listed on the Ramsar and World :Heritage Conventions and designated as a Biosphere Reserve. Now, with the new approach to environmental values in Tunisia, there is an opportunity to conserve the site - and not furthermore in terms of a sterile conflict of "European migrant birds versus the well-being of Tunisians", but in the context of an integrated management plan for the wetland. Integrated management of this kind was recommended by the European Commission's Working Group on wetlands of Mediterranean type, and by a seminar held in Doñana, Spain, in November 1989 under the auspices of the Ramsar Convention and the Council of Europe with participation of experts from 12 Mediterranean countries, including Tunisia. An integrated management plan will take account of water resources, grazing, fisheries, agriculture, ecotourism, as well as heritage and wildlife values.

22. If such an integrated management plan is to be developed, there will be a need to develop an infrastructure to apply it, not only at National Park level, but with a whole catchment approach. Currently, the Ichkeul National Park itself does not have its own infrastructure and budget. Furthermore, under current conditions of austerity, the Tunisian authorities are unable to create new government positions. The European Commission is therefore investigating the possibility of establishing a structure through some non-governmental body like ENDA, through which funding could be channelled, and in which all interested bodies would have a voice.

23. As a support to this management body, some kind of scientific committee or conservation advisory service is urgently required. Proper management decisions cannot be taken without adequate scientific research and fact-finding. Hitherto, research at Ichkeul has been carried out in a somewhat uncoordinated fashion, by a variety of universities, government departments and individuals. A proper scientific advisory structure must be created in support of the management body.

24. The forthcoming international seminar offers an opportunity to plan a series of measures in the field of conservation and wise use of wetlands, which could provide an example not only for the Mediterranean but for many other countries where water resources are scarce. It is very much to be hoped that the opportunity will be taken and that a report on the plan can be presented at the Fourth Ramsar Conference, to be held in Montreux, Switzerland in June/July 1990.

Recommendations

25. Recommendations (a) to (d) restate recommendations already made in the previous Monitoring Report of April 1988. Recommendations (e) to (g) are new:

(a) Since control of water flowing through the Oued Tindja is crucial to maintaining the ecological character of the Ramsar site, the highest priority should be given to completing the sluice in 1990, and to establishing agreed operation rules.

(b) The educational opportunities offered by the Ecomuseum and its exhibition should be fully exploited, through appointment of appropriate staff and development of appropriate educational material.

(c) The technicians responsible for operating the sluice and the Ecomuseum should receive specialized training. The Ramsar Bureau is ready to offer its cooperation in this field.

(d) The drainage canals inside the National Park in the Joumine and Melah marshes should be filled as soon as possible, preferably before the seminar in February 1990. Apart from their deleterious effect on the ecology of the marshes, their continuing existence is symbolic of delays and disappointments.

(e) The February 1990 international seminar on Ichkeul should propose a range of imaginative integrated management measures for the Ichkeul wetland and its catchment areas. Full account should be taken of all the wetland functions and values, especially its fishery, grazing, tourist and educational potential, and its wildlife. The full economic value of the Ichkeul wetland must be considered in any future cost/benefit studies. Evaluations of proposed irrigation schemes should utilize realistic assumptions and take full account of any adverse effects of the schemes.

(f) The February 1990 seminar should propose structures which will enable an integrated management plan to be developed and implemented; these are likely to include a representative management body and an advisory scientific support body. The foreign researchers who have considerable experience of work at Ichkeul should integrate their work even further with Tunisian counterparts.

(g) The organization(s) selected to undertake studies and works after the February 1990 seminar should be fully competent in questions of ecology, sustainable development, environment, economics and engineering.

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