

**MAMIRAUÁ
SUSTAINABLE
DEVELOPMENT
RESERVE, BRAZIL**

**LESSONS LEARNT
IN INTEGRATING
CONSERVATION WITH
POVERTY REDUCTION**

**IZABELLA KOZIELL
CRISTINA Y.A. INOUE**

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ACKNOWLEDGEMENTS

Our thanks go to the Mamirauá project team for hosting us and giving us such a thorough background to the Mamirauá project. This work was carried out with the financial contribution of the UK Department for International Development (DFID). The opinions expressed in this book are the authors alone and should not be taken to represent the views of DFID.

AUTHORS

Izabella Koziell is now working as Environment Adviser for DFID and can be contacted at i-koziell@dfid.gov.uk

Cristina Inoue is now a Professor at the International Relations Institute of the University of Brasília, Brazil, and can be contacted at cris1999@gmail.com

IIED
3 Endsleigh Street
London WC1H 0DD
United Kingdom

Tel: +44 (0) 20 7388 2117
Fax: +44 (0) 20 7388 2826
Website: www.iied.org

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ISBN: 1 84369 241 4

All IIED publications can be purchased or downloaded through our website:
www.iied.org/pubs

Design and layout: Smith+Bell (andymss@aol.com)
Print: Russell Press, Nottingham UK

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ACRONYMS

CBD	UN Convention on Biological Diversity
CnPq	National Council for Scientific and Technological Development
DFID	Department for International Development
IBAMA	The Brazilian Federal Environment Agency
IPAAM	The Environmental Protection Institute of the State of Amazonas
MSDR	Mamirauá Sustainable Development Reserve
NTFP	Non-timber forest product
ODA	Overseas Development Administration
OPR	Output-to-Purpose Review
RAMSAR	Ramsar Convention on Wetlands
RESEX	Reservas Extrativistas (Extractive Reserves)
SCM	Sociedade Civil Mamirauá
SDR	Sustainable Development Reserve
VEAs	Volunteer Environmental Agents

RESUMO EXECUTIVO

Contexto

A Reserva de Desenvolvimento Sustentável Mamirauá se localiza a noroeste do Brasil, no Alto Amazonas e na confluência dos rios Solimões e Japurá. A reserva se situa numa região composta por florestas alagáveis, ou várzea, e possui uma excepcional importância global e local do ponto de vista da biodiversidade. Há muitas espécies endêmicas e a diversidade de plantas é elevada. As cerca de 400 espécies de peixe tornam a reserva um dos locais de maior diversidade no mundo para este grupo. Cerca de 1800 pessoas moram no interior e ao redor da reserva, as quais dependem da pesca para a sua sobrevivência, e um pouco da agricultura e da extração de madeira.

O grande índice de pobreza na região levou a Igreja Católica a se engajar no desenvolvimento social local na década de 1970. Na década seguinte, um grupo de pesquisadores brasileiros iniciou uma série de trabalhos biológicos e antropológicos de caráter inovador no Mamirauá. Naquela época, a região foi transformada em Estação Ecológica – uma das mais restritas categorias de unidades de conservação no Brasil, a qual não permite a ocupação humana nem o uso do solo.

A pesquisa científica na região fez emergir a convicção de que sem o envolvimento da população local no manejo da mesma, a sua viabilidade estaria comprometida no longo prazo. A enorme pressão exercida por interesses comerciais externos, aliada à falta de recursos governamentais para a fiscalização, tornava que a aplicação da lei pelas autoridades era praticamente impossível. Desta forma, um novo conceito foi desenvolvido – uma área protegida ocupada por moradores locais que utilizariam seus recursos de forma sustentável. A renda obtida com essa exploração incentivaria então a população local a se engajar na fiscalização da região e em atividades para a conservação. Os pesquisadores exerceram forte pressão sobre o governo brasileiro e, finalmente, uma nova categoria de unidade de conservação – a reserva de desenvolvimento sustentável – foi criada em 1996, com a transformação da Estação Ecológica Mamirauá na Reserva de Desenvolvimento Sustentável Mamirauá (RDSM).

Os mesmos pesquisadores formaram a ONG Sociedade Civil Mamirauá (SCM), através da qual continuaram a desenvolver seus trabalhos na região – para os quais conseguiram recursos significativos através de doações de vários parceiros como o DFID (Departamento do Reino Unido para o Desenvolvimento Internacional), o governo do Brasil, a União Europeia, o WWF (Fundo Mundial para a Natureza) e a *Wildlife Conservation Society* (Sociedade de Conservação da Vida Selvagem). Os trabalhos subsequentes na RDSM procuraram conciliar a efetiva conservação da biodiversidade da região, de enorme valor global e local, com a melhoria da qualidade de vida dos moradores locais e com a legitimação dos usuários da área. O núcleo da SCM estabeleceu um modelo de trabalho baseado, portanto em “populações humanas em áreas protegidas”, o qual pudesse ser replicado em escalas maiores em outros ecossistemas amazônicos similares.

Os últimos dez anos do modelo “populações humanas em áreas protegidas” na RDSM fez emergir conceitos muito importantes e úteis. Os trabalhos na RDSM procuraram:

- modificar a estrutura política e legislativa para promover um “ambiente operacional” favorável;
- preencher as falhas na governança da região através do desenvolvimento institucional local e de atividades de organização política e, assim, tentar se desvencilhar da política patronal;
- desenvolver e implementar sistemas de manejo e tecnologias que encorajassem o uso sustentável dos recursos naturais existentes;
- introduzir alternativas econômicas baseadas na conservação da biodiversidade e no seu uso sustentável.

É por este motivo que o DFID encomendou este estudo dez anos depois do início do seu apoio ao Projeto Mamirauá, vislumbrando a ampla divulgação e entendimento de suas lições principais não somente no Brasil, mas também em outros países. Aprenderam-se também várias lições sobre o gerenciamento de projetos e das interações com doadores. Tais lições também são apresentadas neste estudo.

Lições aprendidas

Este estudo sobre “lições aprendidas” foi realizado durante um período de trabalho de campo relativamente curto (3 semanas) e, portanto, se constitui apenas numa visão geral da situação. É possível se explorar em muito maior profundidade toda a experiência da RDSM e os conceitos dela surgidos. As autoras deste estudo dividiram as principais lições aprendidas em nove áreas.

1.0 ESTABELECIMENTO DE UM AMBIENTE POLÍTICO E LEGAL VIÁVEL

Ainda existem poucos precedentes em termos legais e de políticas públicas que efetivamente conciliem a conservação e o uso sustentável de recursos naturais com a redução da pobreza e o desenvolvimento econômico. O conceito da RDS e a experiência em Mamirauá representam uma tentativa determinada de se desenvolver um arcabouço político adequado que viabilize a implementação de uma reserva. Neste processo, as lições aprendidas foram as seguintes:

- i) *A sustentabilidade e a reprodutibilidade de novas e promissoras práticas sustentáveis em áreas com elevada diversidade biológica do ponto de vista local e global serão inviabilizadas se não estiverem alicerçadas em um arcabouço político e legal favorável.* Ao se desenvolverem estratégias que tenham por objetivo auxiliar as pessoas a praticarem métodos de pesca e de exploração de madeira que não esgotem o recurso natural, o arcabouço político, legal e institucional mais amplo deve ser favorável aos mesmos. Caso contrário, os obstáculos serão grandes demais, o que inviabilizará tais estratégias.
- ii) *Para que tenham maior chance de sucesso, as propostas de reforma política e legislativa devem contrabalancear as necessidades dos atores envolvidos com os interesses dos políticos e as prioridades do governo.* A equipe do Mamirauá teve o cuidado de apresentar suas propostas a todos os principais tomadores-de-decisão e atores envolvidos e, assim, manter um alto nível de participação. Desta forma, a equipe conseguiu atrair o interesse do governador do estado do Amazonas, cujo apoio à proposta era um fator crucial para a aprovação do decreto de regulamentação da RDS.
- iii) *O trabalho de “relações públicas” ajuda a convencer políticos e tomadores-de-decisão de que mudanças são necessárias, mas uma ação mais direcionada é exigida quando há uma grande decisão envolvida.* A equipe do Mamirauá conseguiu formar uma ampla rede de parceiros ao longo de sua história, e também construir uma forte reputação baseada em pesquisa científica de qualidade. Este processo, aliado a um intenso trabalho de relações públicas, tornou a iniciativa conhecida no Brasil inteiro. Uma compreensão ampliada do Projeto Mamirauá, particularmente em círculos de grande poder de influência, também ajudou a instituir as mudanças políticas e legais necessárias. Além disso, a equipe do Mamirauá se tornou bastante conhecida e, portanto, ganhou a confiança dos planejadores públicos.
- iv) *Em regiões historicamente alijadas de processos democráticos e, portanto, onde organizações não locais intervêm em defesa das populações locais, há um risco de a agenda da organização predominar em detrimento das visões das populações locais, mas, por outro lado, sem esse estímulo externo, é improvável que ocorram mudanças.* O DFID não estava satisfeito com as atividades voltadas ao desenvolvimento social introduzidas pela equipe do Mamirauá. Contudo, o DFID tinha dificuldades para entender as complexidades sociais dentro da RDSM. Não foi possível, no começo, dar início às atividades de desenvolvimento institucional desejadas pelo DFID. Ao invés disso, o projeto proporcionou assistência nas áreas da saúde e educacional. Estas atividades eram essenciais para se obter o apoio de uma população de certa forma avessa ao projeto, mesmo se considerando que as mesmas não seriam sustentáveis a longo prazo e que a sua responsabilidade deveria ser do governo local. Somente após as demandas de saúde e educação terem sido satisfeitas é que um desenvolvimento institucional mais sofisticado poderia então acontecer.
- v) *Onde houver diferentes alternativas de ações estratégicas e legais voltadas para questões semelhantes, essas opções devem ser estruturadas de forma a se complementarem e não entrarem em conflito entre si.* No início, havia muita confusão sobre as respectivas diferenças entre os conceitos da RDS e da Reserva Extrativista (Resex). Quando dois conceitos semelhantes são estabelecidos, é necessário comunicar com mais clareza as diferenças entre ambos, a fim de que sejam bem entendidas. A Resex é uma categoria de unidade de conservação que permite a presença de populações humanas e o uso sustentável em

ecossistemas mais simples, onde uma população tradicional explora geralmente um único recurso. Por outro lado, o conceito de RDS se adapta melhor a ecossistemas mais complexos – com altos índices globais e locais de diversidade biológica – e que permite que uma gama mais diversificada de populações locais tenha acesso a mais recursos.

2.0 ENFRENTAMENTO DE PROBLEMAS DE GOVERNANÇA EM ÁREAS MARGINALIZADAS

O Projeto Mamirauá atentou para a importância do desenvolvimento institucional na área da RDSM, onde a inexistência de instituições deixou a população local vulnerável à exploração por agentes externos. O Projeto introduziu uma série de atividades participativas e de organização política, das quais emergiram as seguintes lições:

- i) *Iniciar a partir de quaisquer processos institucionais e sociais (pré-) existentes.* O Projeto Mamirauá deu continuidade a um trabalho de desenvolvimento institucional executado anteriormente pela Igreja Católica, o qual forneceu ao Projeto uma plataforma muito importante num ambiente de trabalho repleto de obstáculos.
- ii) *Diante de um ambiente físico e social de difícil trato, escolha a entrada mais fácil e garanta que as atividades sejam disseminadas ao longo do caminho que ofereça menor resistência.* A maioria das atividades do Projeto se concentrava no sul da RDSM, onde a equipe do Mamirauá já havia estabelecido um diálogo com a população local e, desta forma, era bem aceita pela mesma. Em outras regiões da reserva, a população era menos receptiva e, conseqüentemente, muitos anos seriam necessários para que as atividades do Projeto fossem implementadas. A focalização em uma única área também permitiu ao Projeto estabelecer modelos de atividades que poderiam ser utilizados em caráter demonstrativo em outras regiões.
- iii) *Qualquer agente externo que promova o desenvolvimento institucional deve trabalhar com a estrutura existente e adquirir independência de início.* Para acelerar as atividades voltadas à saúde e educação, o Projeto trouxe pessoal de fora adicional ao existente localmente. Se por um lado esta decisão certamente ajudou a tornar estes serviços disponíveis mais rapidamente a mais pessoas, o resultado foi bastante custoso e, conseqüentemente, não sustentável. Ao estabelecer atividades deste tipo, é melhor investir em estratégias que tenham durabilidade na ausência de financiamento externo.
- iv) *O desenvolvimento institucional em áreas marginalizadas requer paciência, perseverança e a compreensão de diferenças culturais – “ande devagar e calmamente, mas não deixe de ir em frente”.* Requerem-se habilidades muito especiais para executar um trabalho em regiões onde há estruturas sociais complexas, com pessoas para as quais foram feitas promessas vazias durante anos, cuja confiança em pessoas vindas de outros lugares é frágil, onde o analfabetismo impera e onde existem poucas instituições formais. A equipe do Mamirauá teve a sorte de atrair para a região profissionais com a necessária paciência e perseverança para lidar com essas circunstâncias e estas pessoas deram uma contribuição muito significativa ao sucesso do projeto.
- v) *É útil conciliar o desenvolvimento institucional com atividades que gerem renda, uma vez que as mesmas trazem benefícios tangíveis.* É improvável que comunidades humanas que vivem num ambiente altamente dinâmico e de incertezas queiram participar de atividades de desenvolvimento institucional, a menos que elas vislumbrem um retorno econômico claro e direto. O Projeto Mamirauá investiu em atividades de manejo florestal e pesca que gerassem renda como pontos de partida cruciais para o fortalecimento de instituições locais.
- vi) *É necessário cautela e sensibilidade ao se atraírem os grupos mais marginalizados no processo ou, caso contrário, há uma enorme chance de rejeição.* O Projeto Mamirauá reconheceu a real necessidade de envolver as mulheres da RDSM nos seus trabalhos. Todavia, levando-se em consideração o quão delicada é localmente a questão de gênero, a equipe do Projeto teve o máximo cuidado ao lidar com a mesma. Este cuidado valeu a pena e as mulheres vêm se envolvendo cada vez mais em várias associações.

3.0 CUMPRIMENTO DE REGRAS E FISCALIZAÇÃO

Um elemento essencial em qualquer programa de manejo de recursos naturais é um programa de fiscalização. Fiscalizar uma vasta área como a Amazônia com condições mínimas de trabalho se constitui numa grande desafio para o poder público. Como há escassez de

recursos governamentais para um monitoramento efetivo, o Projeto Mamirauá implementou, em nível experimental, um esquema de fiscalização de base comunitária e montou uma rede de agentes ambientais voluntários (AAVs). Esta experiência trouxe muitas lições de grande utilidade:

- i) *As regras de fiscalização devem ser elaboradas e negociadas de forma participativa com todos os principais atores e devem-se permitir modificações periódicas.* O Projeto Mamirauá introduziu uma série de novas regras de acesso aos recursos da RDSM, as quais desagradaram profundamente os moradores de fora da reserva, uma vez que elas impuseram várias restrições ao comércio que era anteriormente promovido por pescadores de outras regiões em detrimento dos moradores da RDSM. Algumas atividades foram realizadas para discutir o assunto e ajudar os atores prejudicados a compreenderem o propósito das novas regras. Mesmo assim, a sua implantação se mostrou muito difícil.
- ii) *A forma pela qual os agentes ambientais voluntários são compensadas tem que ser sustentável.* O Projeto Mamirauá inicialmente pagava os AAVs para fiscalizarem a reserva. Com o andamento do Projeto, as comunidades locais se deram conta de que elas não conseguiriam pagar os voluntários por conta própria e buscaram alternativas viáveis de compensação local. Uma comunidade sugeriu o aumento nas cotas de pesca dos agentes, além de liberá-los de algumas obrigações comunitárias. Este processo gerou o estímulo que faltava para que os AAVs continuassem os seus trabalhos. A expectativa de que a população local iria fiscalizar a reserva de forma completamente voluntária era simplesmente ilusória.
- iii) *O monitoramento e o cumprimento das regras funcionam melhor se houver uma parceria entre as comunidades afetadas e as autoridades.* O trabalho de fiscalização é extremamente caro e, em muitos países, o governo não têm condições de alocar os recursos necessários. O engajamento de agentes comunitários voluntários ou guardas representa um passo à frente e estas pessoas são melhores aproveitadas quando fazem a fiscalização local. Contudo, como os agentes comunitários raramente têm poder de polícia e, portanto, de dar voz de prisão, a sua autoridade é limitada e com frequência insuficiente para dissuadir os transgressores mais violentos.
- iv) *Faz-se necessário expandir um sistema de monitoramento e fiscalização para uma área maior e também “cortar o mal pela raiz”.* Se por um lado o sistema de fiscalização implementado na RDSM trouxe proteção efetiva à sua área, os usuários que exerciam atividades não sustentáveis simplesmente as deslocaram para regiões da reserva “não fiscalizadas”. Devido à escassez de recursos para a fiscalização, esta atividade só dá certo até certo ponto. O que ajudaria a promover a exploração de recursos naturais e métodos de produção ambiental e socialmente corretos seria tornar o consumidor mais consciente sobre a sustentabilidade ou não dos produtos por ele consumidos. Desta forma, o mercado forçaria os produtores a buscarem métodos mais sustentáveis, o que, por sua vez, diminuiria a necessidade de uma fiscalização tão intensiva e cara.

4.0 DESENVOLVIMENTO DE UMA ESTRUTURA DE MANEJO PARA A CONSERVAÇÃO E O USO SUSTENTÁVEL DE RECURSOS PESQUEIROS E MADEIREIROS

4.1 A experiência do manejo de pesca comunitário

O manejo de pesca de base comunitária se constituiu num componente fundamental do Projeto Mamirauá, dado o significativo valor econômico do pescado e, portanto, da grande dependência local deste recurso. O manejo de pesca comunitário dentro da RDSM se constituía não somente no controle dos estoques e do zoneamento, mas também no desenvolvimento social e da organização dos pescadores. As lições aprendidas sobre o desenvolvimento da atividade pesqueira foram as seguintes:

- i) *A utilização de métodos familiares já estabelecidos do manejo de recursos garante maior aceitação e, conseqüentemente, participação e maior chance de sucesso e sustentabilidade;*
- ii) *O estabelecimento de um modelo bem sucedido de manejo do recurso pesqueiro numa determinada área irá provavelmente estimular a sua disseminação devido ao interesse de outras comunidades, além de ser também uma forma mais eficiente de utilizar os recursos disponíveis;*
- iii) *Uma escolha bem ponderada da comunidade/setor que servirá como piloto é essencial para o sucesso final de qualquer plano de manejo;*
- iv) *O conhecimento científico e o tradicional se complementam no manejo de recursos, es-*

pecialmente porque a inclusão do conhecimento tradicional em geral aumenta a aceitação de métodos de manejo;

v) Em qualquer projeto de comercialização de pescado, é necessário muito cuidado na sua implementação, incluindo não somente a identificação de mercados, mas também a identificação de pessoas-chaves a serem treinadas;

vi) A implementação de novas atividades que gerem renda deverá ocorrer em localidades que apresentem evidências de experiências prévias bem sucedidas e deverá priorizar atividades sobre as quais já existam conhecimento e experiência locais;

vii) Os proponentes do Projeto devem colocar em prática um constante processo de auto-avaliação com o objetivo de otimizar o desempenho da atividade.

4.2 A experiência do manejo florestal comunitário

O manejo florestal comunitário também é um componente importante do Projeto Mami-rauá, pois através dele é gerada renda durante o período da cheia, quando não há pesca nem plantio. Os itens seguintes constituem um resumo das lições aprendidas com o manejo florestal comunitário:

i) Os projetos de manejo continuam a desempenhar um papel crucial ao influenciarem políticas voltadas para o setor e ao provocarem mudanças na legislação;

ii) É essencial elaborar-se procedimentos e leis simples, mas efetivas, para o combate à extração ilegal de madeira;

iii) O estabelecimento de associações legalizadas de produtores é difícil, mas representa um importante passo, pois contribui para desmontar o tradicional (mas extremamente injusto) sistema de escambo;

iv) Nas localidades onde sobraram poucas espécies cuja madeira possui alto valor, devem-se fazer esforços para agregar valor às espécies menos valiosas;

v) Os dados obtidos a partir de um bom monitoramento podem auxiliar no aperfeiçoamento das regras.

5.0 IMPLEMENTAÇÃO DE ALTERNATIVAS ECONÔMICAS SUSTENTÁVEIS – ECOTURISMO

O ecoturismo foi introduzido na RDSM como uma alternativa de geração de renda para a população local e como uma forma de compensá-la pelas perdas provocadas pelas restrições impostas pela conservação.

i) O financiamento do ecoturismo de base comunitária numa região distante por doadores viabiliza a implementação da atividade. Os custos conseqüentes da implementação de uma infra-estrutura turística de alta qualidade numa área remota são geralmente tão elevados que a iniciativa privada é desencorajada a investir na atividade. Na RDSM, se o DFID não tivesse fornecido recursos para a construção da pousada flutuante e outros componentes da infra-estrutura turística, é improvável que qualquer empresário o faria. E a iniciativa é considerada entre as de maior sucesso em relação ao ecoturismo de base comunitária na Amazônia. Nestes casos, onde o potencial do ecoturismo de base comunitária é grande, mas o lucro para o investidor não é tão encorajador, doações externas, como as disponibilizadas pelo DFID ou outras organizações de auxílio, podem ajudar a alavancar tais iniciativas promissoras.

ii) Mesmo se os benefícios gerados pelo ecoturismo forem aparentemente limitados, o seu valor pode ser alto para a comunidade local. O ecoturismo gerou benefícios somente para as comunidades dentro do setor no qual ele foi implementado. Estes benefícios foram significativos, incluindo valores educacionais muito importantes. Além disso, o ecoturismo permitiu a abertura da região a visitantes, gerando, assim, interesse nacional e internacional.

6.0 GERENCIAMENTO DO PROJETO

i) Certificar-se de que os termos e condições da relação entre doador e parceiro são plenamente compreendidos por todos os atores ao longo de todo o processo. Uma comunicação não eficiente entre o DFID e o Projeto em relação a questões administrativas gerou uma série de desentendimentos, especialmente durante a etapa final do Projeto. Os termos e condições devem ser esclarecidos conjuntamente entre os parceiros desde o início e periodicamente ao longo do Projeto. Esta medida deve minimizar as chances de ocorrerem desentendimentos indesejáveis.

- ii) *A sustentabilidade institucional e financeira de projetos financiados por fundos externos deve ser avaliada desde as etapas iniciais.* Durante um certo período de tempo, o Projeto Mamirauá recebeu recursos significativos, os quais custearam as despesas recorrentes do manejo da RDSM. As medidas tomadas para diminuir a dependência destes recursos foram, todavia, tomadas muito tarde no decorrer do Projeto, o que resultou na paralisação de algumas atividades com o fim do financiamento do DFID. Qualquer projeto que dependa de fundos externos deve construir, desde o início, a sua independência institucional e financeira, assim como a sua sustentabilidade.
- iii) *É inevitável cometerem-se erros na implementação de um projeto e, desta forma, respostas defensivas e críticas não são construtivas – é muito mais importante aprender com os erros e continuar em frente.* Ao longo da implementação do Projeto, a política geral do DFID sofreu uma mudança de curso para priorizar a redução de pobreza. O Projeto Mamirauá passou a ser visto como muito centralizado no componente ambiental e, logo, não se encaixava mais na nova política do DFID. A reação do DFID foi, de certo modo, injusta, uma vez que o Projeto havia sido elaborado sob um diferente enfoque. Ao invés do DFID forçar os projetos “antigos” a se adaptarem ao seu novo regime, ele deveria reconhecer os pontos fortes do Projeto e deixá-lo seguir o rumo previamente definido até o final. Mas o DFID insistiu em interferir nos rumos do Projeto, o que levou a um estremecimento da sua relação com o mesmo e, mais adiante, à total interrupção de diálogo.
- iv) *Uma mescla de hierarquia com gestão participativa dá melhores resultados.* O diretor a cargo do Projeto Mamirauá até 2003 tinha grande capacidade de liderança, controlando a evolução do Projeto e conduzindo-o na direção que ele considerava a melhor. O DFID acreditava que um sistema de gestão mais participativa teria sido mais apropriado. Provavelmente, o que teria funcionado melhor teria sido uma combinação das duas estratégias, considerando-se que uma grande parcela do sucesso do Projeto Mamirauá deve ser atribuída ao estilo inspirador e carismático do seu antigo diretor, mesmo que tal atitude tenha sido interpretada como vinda “de cima para baixo” pelo DFID.
- v) *É necessário se conciliarem incentivos financeiros com profissionais para levar pessoas de alta qualidade profissional a trabalharem em regiões isoladas.* O Projeto Mamirauá atraiu pessoas determinadas e de grande qualidade profissional, que trabalharam no mesmo por vários anos, apesar das condições árduas e isoladas de trabalho. O Projeto não se dispunha a pagar salários acima da média somente para atrair estes profissionais, preferindo oferecer outras formas de satisfação profissional. Logicamente que esta atitude às vezes dificultou a seleção de profissionais adequados em número suficiente, o que poderia ter sido evitado se o Projeto tivesse sido menos rígido em relação a não pagar melhores salários.

7.0 O PAPEL E A RESPONSABILIDADE DO DOADOR

- i) *Os funcionários e os consultores do agente doador devem ser plenamente informados sobre o contexto do Projeto de modo que a sua influência sobre o progresso do mesmo possa ser identificada na sua totalidade.* Quando os funcionários e os consultores do agente doador não têm muita experiência numa região, é especialmente importante que eles sejam inteirados do contexto no qual vão trabalhar. Houve muitos desentendimentos sobre o Projeto Mamirauá devido à falta de uma contextualização plena e adequada feita pela equipe do DFID local para profissionais de fora do Projeto.
- ii) *É necessário se esforçar para garantir que as diferenças culturais – de gerenciamento e comunicação – não resultem em graves desentendimentos.* No Projeto Mamirauá, o uso inconseqüente de certas palavras num relatório de avaliação, que podem soar inócuas para o leitor, mas que têm grande significado para aquelas pessoas sendo avaliadas, provocaram muito aborrecimento e abalou seriamente certos relacionamentos. Houve também uma falta de compreensão e respeito dos profissionais do DFID no Reino Unido envolvidos no Projeto em relação ao estilo de gerenciamento local. Um esforço maior deveria ter sido feito pelo DFID em entender as implicações das diferenças culturais no modo em que o gerenciamento do Projeto Mamirauá foi conduzido no Brasil.
- iii) *Projetos bem sucedidos que se encontram em curso não deveriam sofrer influências de mudanças na política geral e no quadro de funcionários do agente doador e, quando a mudança for necessária, ela deve ser planejada e implementada cuidadosamente ao longo do tempo.* Houve uma radical reorientação política no DFID em 1997 e vários

bons projetos como o Mamirauá foram atingidos, ou tornaram-se alvos de críticas, pois não mais se encaixavam com folga no novo regime. O DFID ou qualquer outro doador deveria agir cautelosamente durante processos de mudança como este para que não fragilizem e destruam um bom projeto, simplesmente baseado no argumento de que o mesmo não se adequa à nova realidade. Ao invés disso, o processo de transição deve ser gradual e os parceiros devem ser plenamente informados de quaisquer mudanças pertinentes e em curso.

- iv) *As escalas de tempo e os horizontes dos doadores e dos parceiros geralmente se encontram fora de sintonia, especialmente onde há comunidades carentes e marginalizadas envolvidas.* Há um reconhecimento cada vez maior de que o desenvolvimento social e institucional leva tempo, especialmente quando um projeto tem que se confrontar com injustiças gritantes. Todavia, as escalas de tempo dos doadores são geralmente muito curtas para permitirem o desenvolvimento social e este é um aspecto que deve ser melhor apreciado na elaboração de um projeto.

EXECUTIVE SUMMARY

BACKGROUND

The Mamirauá Sustainable Development Reserve is situated in North Western Brazil, in the upper reaches of the Amazon, at the confluence of the Solimões and Japurá Rivers. It is located within an area of flooded forest, or *várzea*, and is of exceptionally high global and local biodiversity value. There are many endemics, and plant diversity is high. The fishery with around 400 recorded species makes it one of the most diverse in the world. About 1800 local people live within and around the reserve depending on fish, some agriculture and timber extraction.

The high poverty levels within the area attracted the Catholic Church which was active in promoting social development in the 1970s. In the 1980s, a team of Brazilian scientists started some innovative biological and anthropological research in Mamirauá. The area at the time was classed as an Ecological Station – one of the strictest protected area categories in Brazil, which allowed no human habitation and no harvesting.

Out of the scientists research grew recognition that without involving local people in the management of the area, its long-term viability would be threatened. The intense pressure on the area from external commercial interests, coupled with the lack of state government resources for surveillance meant that effective enforcement by state authorities was near impossible. A new concept was developed – a protected area that would allow for human habitation and sustainable use of the local resources. Returns from harvesting would then provide local people with the incentive to engage in surveillance and conservation activities. The scientists lobbied the Brazilian Government hard, and eventually a new category – a Sustainable Development Reserve – was created with Mamirauá designated as such in 1996.

The scientists formed an NGO Sociedade Civil Mamirauá (SCM) through which they carried out further work in the area – for which they received substantial grants from a number of donors – UK Department for International Development, the Brazilian Government, the European Union, WWF and the Wildlife Conservation Society. Subsequent work in the MSDR focused on developing suitable approaches for carrying out effective conservation in an area of high global and local biodiversity value, whilst at the same time improving the livelihoods of the residents and legitimate users of the area. The SCM's core aim was to establish a working model, which could then be used to demonstrate 'people in protected areas' approaches so that these could be replicated on a much wider basis in similar Amazonian ecosystems.

The last ten years of working with 'people in protected area' approaches in the MSDR have yielded some very important and useful insights. The initiative made a concerted attempt to:

- change policy and legislative frameworks to provide a more 'enabling environment' within which to operate;
- address the governance gap within the area, by engaging in local institutional development and political organisation activities, trying to move beyond patronage politics;
- develop and implement the management systems and technologies that would encourage sustainable use of existing natural resources;
- introduce economic alternatives based on biodiversity conservation and its sustainable use.

It is for this reason that after ten years of its support, DFID commissioned this study, with a view to ensuring the key lessons of the Mamirauá project gain wide readership and understanding, not only in Brazil but also elsewhere. There were also several lessons learnt from how to manage projects and donor interactions. These have also been captured.

LESSONS LEARNT

This 'lesson learnt' study was based on a relatively short period in the field (3 weeks) and therefore provides only an overview. There is much more depth of experience and insight that could still be usefully captured. The authors split the key lessons learnt into nine overall areas.

1.0 CREATING AN ENABLING POLICY AND LEGAL ENVIRONMENT

There are still few policy and legal precedents that effectively combine conservation and sustainable use of resources with poverty reduction and economic development. The SDR concept, and the Mamirauá initiative, made a concerted attempt to develop a suitable enabling policy framework and then to implement it. In doing so the following lessons were learnt:

- i) *The sustainability and replicability of promising new approaches to sustainable livelihoods in areas of high local and global biodiversity will be undermined if policy and legal frameworks remain unsupportive of them.* When developing approaches that aim to help people develop methods of fishing and timber harvesting that do not overuse the resource, the wider policy, legal and institutional frameworks must be supportive otherwise constraints will be too great and render such approaches unviable.
- ii) *Proposals for policy and legislative reform have to balance stakeholders' needs with politicians' interests and government priorities for the greatest chance of success.* The Mamirauá team ensured that their proposals were presented to all key decision-makers and affected stakeholders thus maintaining a highly participative approach. By doing so they managed to capture the State Governor's interest, whose backing of the proposal was a critical factor in the passing of the SDR decree.
- iii) *'Public Relations' helps convince politicians and decision-makers that change is necessary, but targeted promotion is needed where the stakes are high.* The Mamirauá team managed to develop a wide network of supporters over time, and also built a strong reputation based on sound research. This, in combination with extensive PR, raised awareness across Brazil about the initiative. Wider awareness of the Mamirauá programme, particularly in influential circles also helped institute the necessary policy and legislative changes. In addition, the Mamirauá team were well-known and therefore better trusted by policy makers.
- iv) *Where democracy is weak and external organisations have to lobby on behalf of local people there is a trade-off: the organisation's agenda can feature more than the views of the local people, but without such external stimulus, change is unlikely to happen.* DFID was not happy with the social development activities introduced by the Mamirauá team. DFID was, however, also slow to understand the social complexities within the MSDR area. It was not initially possible to start with the institutional development activities that DFID desired, instead the project provided health and education services. Such activities were essential in order to first win support for the project by a rather hostile population, even though they were not sustainable in the long-term, and should have been the responsibility of the local government. It was only after these health and education needs had been met that more sophisticated institutional development could then start.
- v) *Where there are different policy and legal options targeting similar issues, these should be structured to complement and not conflict with each other.* There was much initial confusion over the respective differences between the SDR and the Extractive Reserve (RESEX) protected area concepts. When two similar concepts are established there needs to be more clarity in communication to ensure that the differences are well understood. The RESEX is a protected area category that allows human habitation and sustainable use in simpler ecosystems, where indigenous peoples extract a single resource. The SDR on the other hand is better suited to more complex ecosystems – with high global as well as local biodiversity values – and which allows a more mixed local population access to more resources.

2.0 ADDRESSING THE GOVERNANCE GAP IN MARGINALIZED AREAS

The Mamirauá project recognised the importance of institutional development in the MSDR area, where the lack of institutions left the local population highly vulnerable to exploitation by external operators. The project introduced a range of participatory and political organisation activities out of which the following lessons emerged:

- i) *Build on any (pre-) existing institutional and social development processes.* The Mamirauá project built on institutional development work previously carried out by the Catholic Church and this provided a very important springboard in a difficult working environment.

- ii) *When faced with a difficult physical and social environment, go in through the easiest entry point and make sure activities spread outwards along the paths of least resistance.* The majority of project activities focused on the southern sector, here the project team had already developed contacts and were therefore welcomed by the local people. Other parts of the reserve were less open and, consequently, it would have taken years for project activities to get going. Focusing on one area also enabled the project to set up working examples, which could then be used for demonstration purposes in other areas.
- iii) *Any external agent promoting institutional development should work with existing structure and instil independence from the outset.* To accelerate health and education activities, the project took on additional personnel to those locally available. Whilst this certainly helped make these services available to more people more quickly, the set up was costly and therefore not sustainable. When establishing such activities it is best to work with approaches that can last in the absence of external funding.
- iv) *Institutional development in marginalized areas requires patience, perseverance and consideration for cultural differences – ‘go slowly and gently but stick with it’.* Work in areas where there are complex social structures, with people who had had years of empty promises, whose trust for outsiders is shaky, where illiteracy levels are high and where there are few formal institutions requires very special skills. The Mamirauá team were fortunate to have attracted some staff with the necessary patience and perseverance to deal with such circumstances. These individuals made a very significant contribution to the success of the project.
- v) *It helps to link institutional development with livelihood activities, as the latter promises tangible benefits.* Communities living in highly dynamic and uncertain circumstances are unlikely to want to participate in institutional development activities unless they see a clear and direct livelihood return. The Mamirauá project worked through forestry and fishery income generating activities as the key entry points for strengthening local institutions.
- vi) *Bringing the most marginalized groups into the process should be managed cautiously and sensitively, otherwise there is a high chance of rejection.* The Mamirauá project recognised that there was a real need to work with the women in the MSDR. However, given much sensitivity over gender issues, the team approached the matter with great caution. This cautious approach paid off and women have become increasingly more involved in the various associations.

3.0 RULES ENFORCEMENT AND SURVEILLANCE

An essential element of any sustainable natural resource management programme is a surveillance programme. Instituting surveillance over a vast area such as the Amazon, with minimal resources presents governments with many challenges. Given the lack of state resources for effective monitoring, the Mamirauá project experimented with a community based surveillance scheme and established a network of voluntary environmental agents (VEAs). This experience yielded many useful lessons:

- i) *Rules should be formulated and negotiated in a participatory way, with all key stakeholders, and allowance made for periodic modification.* The Mamirauá project introduced a series of new access rules, which were highly unpopular with outsiders, as they imposed various restrictions on external commercial fishermen who had previously benefited at the expense of the local residents of the MSDR. Some steps were taken to discuss and help affected stakeholders understand the purpose of these rules, however, it still proved too difficult to implement.
- ii) *The means by which local volunteer environmental agents are compensated has to be sustainable.* The Mamirauá project initially paid the VEAs to do surveillance work. Over the course of the project, the local communities realized that they would be unable to pay the volunteers themselves and identified alternative means of locally affordable compensation. One community looked to increasing the fishing quotas of the agents, and also relieving them of certain community duties. These steps created the necessary incentive for the VEAs to continue their work. Expecting that local people can carry out surveillance activities on a purely voluntary basis is simply not realistic.
- iii) *Monitoring and enforcement works best as a partnership between affected communities and formal authorities.* Surveillance is very costly and in many countries governments

cannot afford to dedicate the necessary resources. Engaging community volunteer agents or guards is one way forward, and these are most often best placed to do local monitoring. However as community agents rarely have powers of arrest, their authority is restricted and are often unable to dissuade the more aggressive violators.

- iv) *Work towards expanding an affordable monitoring and enforcement system over a wider area as well as tackling the problem 'at source'.* Whilst the surveillance system established within the MSDR, effectively protected that area, unsustainable users simply shifted their activities to other 'unsurveyed' areas. With limited resources for surveillance, this can only ever go part of the way. Making consumers more discerning of whether or not their products are sustainable, would help ensure that extraction and production methods are more environmentally and socially friendly. The market would then force producers to become more sustainable and in turn this would reduce the need for such intensive and costly surveillance.

4.0 DEVELOPING MANAGEMENT FRAMEWORKS FOR CONSERVATION AND SUSTAINABLE USE OF FISH AND TIMBER

4.1 *The community fisheries experience*

Community based fisheries management was a critical part of the Mamirauá project, given significant economic value of the fishery and therefore the high levels of dependency on this resource. The community fisheries work within the MSDR involved not only stock regulation, and zonation, but also social development and organisation of the fisherfolk. Lessons learnt in fisheries development included:

- i) *Using an established and familiar method of resource management ensures greater acceptance with consequent participation and thus greater chance of success and sustainability;*
- ii) *Concentrating on a particular area to establish a successful model of resource management is more likely to stimulate replication through popular demand and is a more efficient way of using available resources;*
- iii) *Well considered choice of the initial target community/sector is essential for the eventual success of any management plan;*
- iv) *Science and traditional knowledge have complementary places in the field of resource management, particularly as the inclusion of traditional knowledge often generates greater acceptance of management measures;*
- v) *In any marketing project careful thought needs to be given to the implementation of marketing, including identification of key personnel for training, not just identification of markets;*
- vi) *New income generating activities are best initiated where there is prior evidence of success and should focus on activities where there is already some local knowledge and experience;*
- vii) *Project proponents should have a constant process of self-appraisal with the aim of optimising performance.*

4.2 *The community forestry experience*

Community forestry is also an integral part of the Mamirauá project as it provides a critical revenue stream during the high-water period when there is no income from fish or farming. The following is a summary of lessons from the community forestry work:

- i) *Projects continue to play a critical role in policy influence and legislative change;*
- ii) *Creating simple, but effective, legislation and procedures, is essential if illegal activity is to be discouraged*
- iii) *The establishment of legal producer associations is difficult, but it is important as it contributes to the breakdown of the traditional (highly inequitable) barter system*
- iv) *Where there are few valuable timber species left, efforts should be channelled into adding value to cheaper timber.*
- v) *Information derived from good monitoring can help refine regulations*

5.0 INTRODUCING ALTERNATIVE SUSTAINABLE LIVELIHOOD ALTERNATIVES – ECOTOURISM

Ecotourism was introduced into the MSDR to provide an alternative income source for the local people and so to compensate for losses arising out of use restrictions resulting from conservation.

i) *Grant finance helps get a community based eco-tourism initiative going in a remote location.* The cost of establishing high-quality tourist infrastructure in a remote area is often so high as to dissuade private interests from investing. In the MS DR case, if DFID had not provided the necessary resources for the establishment of a floating lodge and other related tourist infrastructure, it is unlikely that a private entrepreneur would have done so. And yet the initiative is considered one of the most successful community based ecotourism initiatives in the Amazon. In such cases, where community based ecotourism potential is high, but where the profit accruing to the investor may not be that encouraging, external grants, such as that provided by DFID or other aid organisations, can help get such promising initiatives established.

ii) *Even if the benefits arising from eco-tourism appear limited, their value can be high to the local community.* The eco-tourism initiative generated benefits for only those communities living within the sector where it was located. However the benefits accruing to these communities were significant and the ecotourism initiative has provided very valuable educational value. It also exposed the area to outsiders, thus generating national and international interest in the area.

6.0 PROJECT MANAGEMENT

i) *Make sure that the terms and conditions of the ‘donor – partner’ relationship are fully understood by all throughout the project process.* A lack of effective communication between DFID and the project on administrative matters meant that a number of misunderstandings arose, particularly towards the end of the project. Terms and conditions must be jointly clarified between partners at the outset, and periodically throughout a project. This should minimise the chances of unfortunate outcomes arising from misunderstandings.

ii) *The institutional and financial sustainability of externally-funded projects has to be addressed from the earliest stages.* The Mamirauá project was very well funded over a period of time, and these resources covered many of the recurrent costs of managing the MS DR. Measures to wean the MS DR off these resources were however taken too late in the project resulting in the halting of some activities once the DFID funds ended. Any externally funded project should ensure that institutional and financial independence and sustainability are built into project activities from the outset.

iii) *Mistakes are inevitable in project implementation therefore defensive and critical responses are not constructive – it is far more important to learn from the lessons arising, and to move on.* During the course of the project, DFID overall policy changed towards a much greater focus on poverty reduction. The Mamirauá project began to be seen as too environmental, and thus not fitting with DFID policy. DFID’s reaction was somewhat unfair, as the project had been designed under a different policy direction. DFID, rather than forcing ‘old’ projects to fit within the new policy regime, should have recognised the project’s strong points, and let it take its previously defined course to its end. Instead DFID insisted on tampering with the project, and this led to a strained relationship, and eventually a total breakdown in communication.

iv) *A combination of hierarchical and participatory management works best.* The late Director of the Mamirauá project was a very strong leader, who kept a close control on progress and led the project in the direction he felt was best. DFID believed that a more participatory management system would have been more appropriate. Probably what would have worked best is a combination of the two, as a large part of the success of the Mamirauá project has to be attributed to the late Directors inspiring and charismatic style, even if it was interpreted as ‘top-down’ by DFID.

v) *A combination of financial and vocational incentives is necessary to attract high quality staff to work in difficult environments.* The Mamirauá project has attracted some high calibre and committed individuals, who have stayed with the project for a number of years, despite the isolated and difficult working conditions. The project did not believe in paying above average salaries just to attract staff and relied on other forms of job satisfaction. Of course this meant that they sometimes struggled to find enough of the right staff and may have benefited from being less rigid about not paying higher salaries.

7.0 DONOR ROLES AND RESPONSIBILITIES

i) *Donor staff and consultants must be fully briefed on context so that its influence on project progress can be more fully appreciated.* When donor staff and consultants have not had much experience in the region, it is especially important that they are fully briefed on the context within which they will be working. There were many misunderstandings in and around the Mamirauá project because of the lack of full and adequate briefing of outsiders by locally based DFID staff.

ii) *Extra effort is required to ensure that cultural differences – in management or communication – do not result in serious misunderstandings.* In the Mamirauá project case the careless use of words in an evaluation report, which were meaningless to the writer, but of great significance to those being evaluated caused much upset and seriously undermined relationships. There was also a lack of understanding and respect accorded to local management styles by DFID's UK based advisers. More effort should have been made by DFID to understand the implications of cultural differences upon the way the Mamirauá project was conducted.

v) *Ongoing successful projects should be protected from upstream policy change and staff changes, and when change is necessary, it should be planned and managed with care and over time.* There was a radical policy shift in DFID in 1997 and many good projects such as Mamirauá were axed, or became targets for attack, because they no longer sat comfortably within the new policy regime. DFID, indeed any donor, should take great care during such policy shifts not to undermine and destroy what is a good project, just because it does not fit with the new policy. Instead phase out should be gradual and partners should be fully informed of any pertinent and ongoing changes.

vi) *The time frames/horizons of donors and development partners are often out of sync, especially where poor or marginalised communities are involved.* There is growing recognition that social and institutional development takes time, especially when a project has to confront gross inequalities. Donor time frames are, however, most often far too short to allow effective social development to happen and this should be more fully recognised in project design.

1.0 PURPOSE

This paper aims to articulate the lessons learnt in generating sustainable livelihoods for poor and marginalized groups living within and around an area of high local and global biodiversity value. The area is the Mamirauá Sustainable Development Reserve (MSDR), in Amazonas State, Brazil. The UK Department for International Development funded a programme in the MSDR for 10 years (1992-2002), together with a number of other donors, including the Brazilian Government¹, European Union, Conservation International, UK World Wide Fund for Nature and the Wildlife Conservation Society².

DFID believes that learning lessons from its period of involvement in the MSDR area will help contribute towards developing a better understanding of how to achieve sustainable livelihoods for people living within or near areas of high biodiversity value. Ensuring that sustainable livelihoods are achieved in concert with biodiversity conservation still presents many difficult challenges in many different countries of the world.

The Mamirauá project's key driver was to conserve the area's high biodiversity value. The project was a pioneer project in that it proposed to safeguard these values by working with the local people in a positive way, rather than treating them as antagonists of nature. At that time the Brazilian Federal Environment Agency (IBAMA) and several NGOs did not believe that 'integrating conservation with development' was possible, or indeed an appropriate way forward. However, the Mamirauá project persevered and was rewarded with many success stories.

2.0 RATIONALE

Those involved in the MSDR initiative over the last 10-15 years – the users and residents of the reserve, project staff, donors and other institutions – have gained considerable experience in tackling the many challenges faced in improving local people's livelihoods through conservation and sustainable use of the locally available resources. People and protected areas are still contentious issues in Brazil, and indeed elsewhere. Knowledge emerging from initiatives, such as Mamirauá, is therefore extremely valuable and should be disseminated more widely for the benefit of others working on similar initiatives.

Over the last decade, there has been much conceptual thinking about how to balance poverty reduction with biodiversity conservation, often manifested on the ground as 'integrated conservation and development' projects or 'community based conservation' initiatives. There has been much criticism targeted at these projects and initiatives, as there are few success stories on the ground. Some of the more radical conservation groups are concerned that devolving control to communities, will simply lead to 'open access' regimes, as communities have neither the capacity nor the incentive to conserve or practice sustainable use. Poverty reduction protagonists feel there are other more pressing priorities, and the returns to poor people from such projects are insufficient. However, placing the blame on the failure of these initiatives to deliver on both fronts misses the point. There is increasing recognition that 'in the right macro-circumstances they could work' and lead to real progress on all fronts: social, economic and environmental. Thus, it is not that 'community-based conservation approaches' or 'integrated conservation and development' are flawed concepts. Policy and legislative frameworks that would support such activities are not in place, and power imbalances between national and local institutions have not been effectively addressed. The MSDR project is interesting as, despite the challenging political environment in Brazil, it has made a highly significant contribution towards creating policy and institutional frameworks that can foster a more harmonious relationship between conservation and human development needs.

The need to continue developing more effective means of linking conservation with poverty reduction is critically important if we are to prevent future threats to biodiversity, whilst at the same time ensuring that poor people's livelihood needs are adequately met. There is now ample evidence to show that rapid and large scale losses of biodiversity – especially where governance is weak – has the most serious negative spin-off effects on the poorest or most marginalized groups. This is particularly evident in Amazonia where, 'mod-

1. Brazilian Government donors included CnPq and FNMA (Fundo Nacional para o Meio Ambiente) and the Government of Amazonas. The Ministry of Science and Technology is currently funding the programme.

2. The original purpose of the project was 'to protect the biodiversity of the Mamirauá Sustainable Development Reserve while securing sustainable improvements in the quality of life of local people'.

ernising' development policies of the 1970s encouraged logging, agriculture and cattle ranching by powerful 'outsiders' or foreign companies, with complete disregard to local sustainability and benefit flows. The negative impacts of their activities on the local people were huge and led to violent protests, with the rubber tappers' revolt resulting in the murder of Chico Mendes. The subsequent exposure to the international media caused many headaches for the Brazilian Government.

It is however equally important that biodiversity conservation does not constrain poverty reduction efforts. Protected area establishment has often led to forced evictions often with deeply disruptive effects on local livelihoods. For instance people were removed and re-settled when the Anavilhanas Ecological Station – a federal conservation unit located in Amazonas State – was established. Resentment and loss of their livelihood source led these people to invade the area repeatedly. The government's inability to police the area meant that considerable damage was done. Removing the local people from the area resulted therefore in little, if any, conservation gain.

To avoid conflicts between biodiversity conservation and poverty reduction actions continuing, it is essential to first build a deeper understanding of where the key livelihood opportunities lie, and what are the key challenges towards their realisation and how these can be resolved. Another critical element is to place protected areas within a wider (e.g. regional) land and resource zoning and management system. Only then can planners gain a better understanding of what might be appropriate within each area and context. It is only then that an appropriate strategy to tackling poverty, development and conservation conflicts can be developed. The next step is to help create viable livelihood opportunities out of conserved or sustainably used biodiversity, and to manage the trade-offs so that more equitable outcomes are achieved. The 'back to the barriers'³ attitudes among certain scientists, and the drive by certain conservation organisations to buy up land within biodiversity 'hotspots' and lock them away for pure conservation purposes⁴, makes this learning even more important.

Creating new livelihood opportunities out of biodiversity conservation and/or its sustainable use might present challenges, but it is not impossible. This does not mean conservation with development approaches are *always* appropriate but in some cases they are essential. And this is usually within areas of high local and global biodiversity value – such as the MSDR, where the local biodiversity helps sustain economically valuable natural resources (i.e. fisheries, timber, NTFPs), or where the global biodiversity makes a vital contribution to ecosystem services or science. There may also be many unrealised livelihood opportunities in such areas – for instance in the MSDR the sustainable use of certain wild resources could deliver very significant income streams for local people, with the right legislative and management frameworks⁵. Ignoring the need for getting biodiversity conservation and poverty reduction to work together in such areas⁶ will only lead to forced migrations, even conflicts, as local resources deteriorate thus heightening competition, or enhancing poverty elsewhere. Alternatively, corrupt individuals will continue to benefit from illegal and illicit trade in these resources, at the expense of those who live with them. It might also lead to knee-jerk reactions by hard-line conservationists, who, with their fine-tuned political skills, are able to persuade governments to re-enact 'no-people' protected areas or restrictive legislation. Finally, even though many of the international 'environmental' obligations (e.g. UN Convention on Biological Diversity (CBD), RAMSAR etc.) are weak in face of trade rules and other market forces, they remain legally binding for countries that have ratified them. Commitments made at the World Summit on Sustainable Development (WSSD) in 2002 have also placed greater emphasis on countries to address the conservation – sustainable poverty reduction dilemma.

Whilst analyses of lessons learnt – such as encapsulated in this report – can deliver useful insights, it is as important to understand how these lessons can be channelled into effective action – and this can be much more difficult. The key challenges to action-oriented progress on balancing conservation with economic development usually include: weak governance, institutions which do not incentivise the pursuit of policy, legislative and technological innovation, a patronage-based political system and a sole focus economic growth disregarding its social and ecological impacts. The MSDR case is interesting in that it pro-

3. 'Back to the barriers' is a metaphor for 'no people' protected areas.

4. Conservation International.

vides some further insights on how to tackle these enormous challenges. It made a concerted attempt to:

- change policy and legislative frameworks to provide a more enabling environment within which to operate;
- address the governance gap within the area, by engaging in local institutional development and political organisation activities, trying to move beyond patronage politics;
- develop and implement the management systems and technologies that would encourage sustainable use of existing natural resources;
- introduce economic alternatives based on biodiversity conservation and its sustainable use.

MSDR did not get everything ‘right’ – there were negative experiences, but this is not uncommon with such initiatives. Key to making mistakes is evidence of an ability to learn and move forward, and there is evidence of this in the MSDR project, even if the changes of approach were sometimes rather slow in getting underway. Indeed, some staff have now gained insights so deep that they do help take analysis of conservation and development initiatives beyond the usual ambiguities. Given the short time period spent with these staff members only a small part of this experience is encapsulated in this short report.

3.0 APPROACH

Most of the information in this paper is based on field work carried out during May 2002 by Izabella Koziell and Cristina Inoue over a period of three weeks. Time was spent visiting MSDR, interviewing project staff and other stakeholders (e.g. federal and state government representatives, villagers etc.) and reviewing key documents. Two DFID Technical Cooperation Officers (TCOs), Brendan Dhalley (Fisheries) and Michiel Meijer (Forestry), also spent a few days in the MSDR and have produced separate reports on the key lessons arising out of the fisheries and forestry components (see Annex 1 and 2).

Given the short time frame, this report can only provide a ‘helicopter’ view of the lessons learnt. Despite this constraint, the authors feel that some valuable insights have emerged. The paper is not an evaluation of the Mamirauá project: the intention is to draw out lessons learnt. Critical comments are delivered to help improve understanding and not to point out weaknesses of parties involved. Every effort was made to draw out lessons as perceived by those involved in, or affected by, the project. However, the authors also had to draw many of their own conclusions about the lessons learnt. This was done in as objective a way as possible, and against current thinking on conservation and development.

The work broadly involved looking at:

- Policy impacts, including:
 - which policies and/or legislation promoted (or not) community access and management of resources?
- Social, institutional and power issues, including:
 - the institutional successes and failures to ensure participation, decision-making and control?
 - relationships between communities within and outside the reserve, especially with regard to access and conflicts?
 - the civil society structures which enabled effective collective control and management
 - and their level of efficiency and sustainability?
 - the definition of roles and responsibilities between the project, municipalities and communities ?
- Socio-economic impacts, including:
 - which aspects of the alternative income generating activities worked, and which did not?
 - who benefited and who did not?
- Biodiversity management, including:
 - what mechanisms were developed to ensure that natural resources were not exploited?
 - what were the perceptions of the poor of any changes in the biodiversity of the MSDR area?

4.0 BACKGROUND

4.1 THE MSDR AREA

The Mamirauá Sustainable Development Reserve is situated in North Western Brazil, in the upper reaches of the Amazon, at the confluence of the Solimões⁵ and Japurá Rivers, 30 km upstream of Tefé in the State of Amazonas. It has a focal area of about 260,000 hectares and a subsidiary area of 864,000 hectares – see Figure 1. The DFID-funded Mamirauá project operated within the focal area only.

The MSDR is located within an area of flooded forest, or *várzea*, most of which is flooded for about 6 months in the year. During the dry period, there are many rivers, creeks, lakes, interspersed with forest and shrubland. During the wet period (June – October) the water level can rise by up to 15m, leaving very little dry land. This is one of the largest water level fluctuations in the Amazon, and has played a critical role in defining the biodiversity and local livelihood patterns in the area.

There are about 1800 people, based in 23 settlements within the focal area of the Reserve⁶, with an additional 3600 classified as ‘resource users’, living in 37 settlements adjacent to the Reserve. There are three indigenous villages in the Reserve⁷, but they differ only slightly from other communities, which are predominantly a mix of white (mainly Portuguese in origin) and Amerindian peoples – often known as *ribeirinhos*⁸. Most settlements are located on the river margins and are small, with an average of 13 households. They have very limited infrastructure and access to social services. High birth rates, high infant mortality (85/1000) and low life expectancy are characteristic of the area. People engage in fishing⁹, hunting, agricultural and forestry activities – with about 83% of their protein intake arising from fish¹⁰. Most fishing and agriculture occur during the low water period placing considerable pressure on household labour during this period. Timber is felled during the low water period, and transported during high waters. Locals consider it a dangerous and labour-intensive activity and markets returns are variable, but it does play a crucial role in delivering income during the flood season, when there are few other sources. The relative importance of these activities varies between settlements. Surplus is sold or exchanged for other products either to itinerant river traders – *regatões* – or directly to markets in the local urban areas.

The MSDR area is of exceptionally high global and local biodiversity value. There are many endemic mammals¹¹ – the white uakari monkey (*Cacajao calvus calvus*) and the blackish squirrel monkey (*Saimiri vanzolinii*) are unique to this area. Aquatic and plant diversity is also very high – the forests have the greatest number of tree species per hectare found in any *várzea* habitat and aquatic mammals such as the pink dolphin (boto vermelho) (*Inia geoffrensis*) and grey dolphin (*tucuxi*) (*Sotalia fluviatilis*) and endangered Amazonian manatee (*Trichechus inunguis*) are characteristic of the area. Indeed ‘Mamirauá’ is the indigenous word for baby manatee!

There are several other primates¹² found within the MSDR and many other mammals¹³, although mammalian diversity tends to be lower than other areas due to the flooding patterns. Species hunted for game meat include: red howler monkey, razor-billed curassow, muscovy duck, white necked heron, tapir, peccary, deer, paca and agouti. Commercial hunting is now rare, although the caiman and river turtle (now restricted by law) once fuelled a highly lucrative trade in these species. The fishery, which is extremely rich – with 400 species making it one of the most diverse in the world.

A great variety of fish, many of which are eaten, are highly productive and hold significant market value. A study of fish caught for subsistence during a two month period identified at least 38 species. Two fish of exceptionally high commercial value – the Tambaqui (*Colossoma macropomum*) and Pirarucu (*Arapaima gigas*) – are very abundant in the area¹⁴. Fish also play a critical role in sustaining the *várzea* – fish depend on the forests for food, which in turn depend on the fish for seed dispersal.

There are three municipalities with jurisdiction over the residents and user communities

5. Otherwise known as the Amazon downstream from Manaus.

6. 1994 census of the focal area.

7. One of the indigenous communities has acquired Indigenous Reserve status under FUNAI (The National Foundation for Indigenous Peoples), and the others are also aspiring to gain similar status. Being an Indigenous Reserve means that Federal Government has supervisory powers over that land.

8. Otherwise known as river dwellers.

9. Fishing activities are grouped into subsistence fishing, fresh and salted fish for commercial markets.

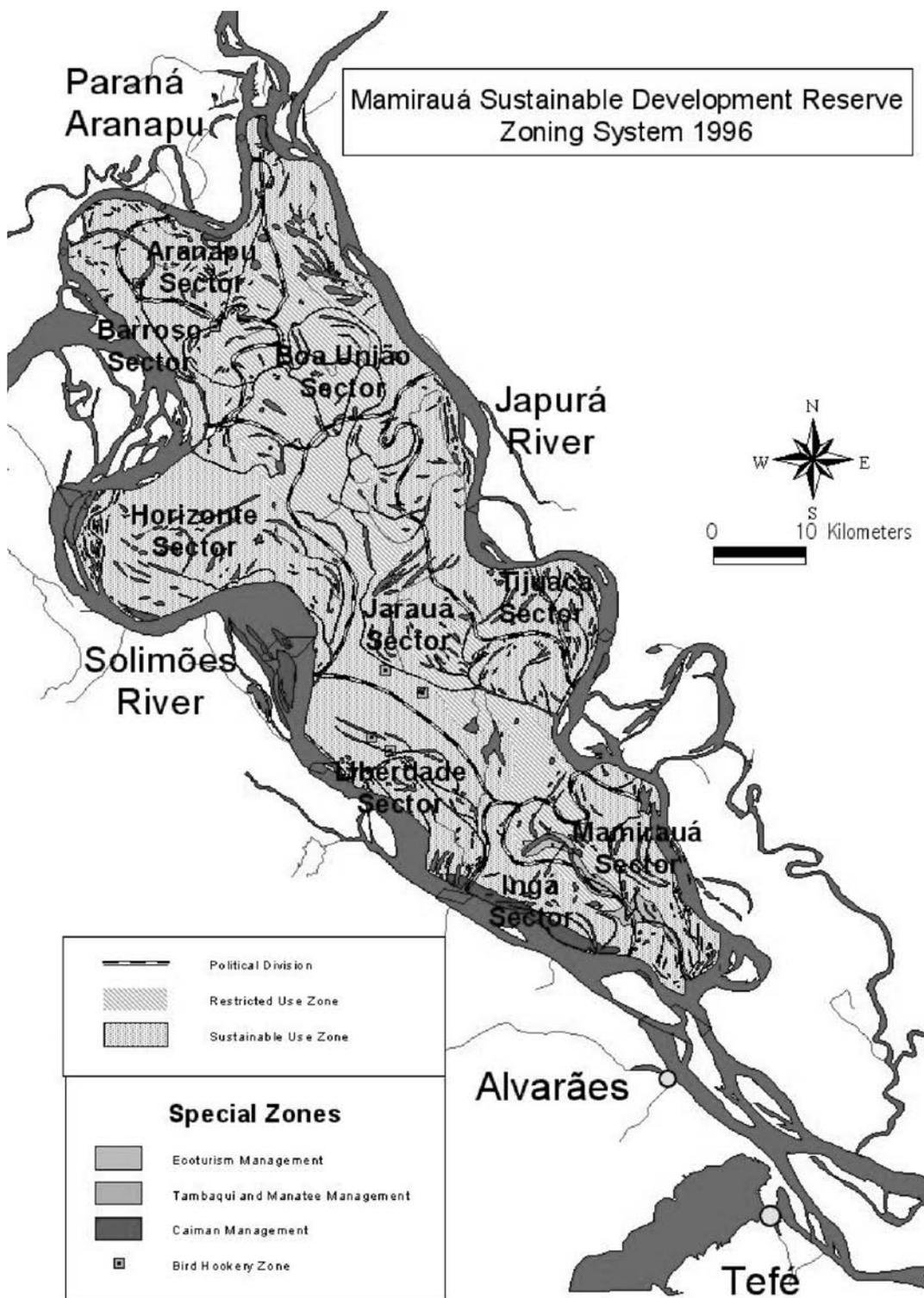
10. With game meat contributing about 11%, chicken and eggs about 6%.

11. Fauna of the flooded forests appear to have a rate of species endemism than adjacent terra firme forests, but their diversity is often lower. Mammals must either be able to live in trees, or be excellent swimmers to survive the seasonal floods.

12. These include red howler monkeys, black faced capuchin monkeys, common squirrel monkeys and pygmy marmosets

13. Such as lowland tapir, peccaries, brocket deer, armadillos, large rodents and agouti (only in the subsidiary area and mainly during the dry season) and jaguar, capybara, red squirrels, sloths and anteaters in the focal area.

14. All details taken from Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Wildlife Conservation International (WCI, nowadays it is called Wildlife Conservation Society) and World Wide Fund for Nature (WWF) (1991) Proposal for the Preparation of a Management Plan for the Estação Ecológica do Lago Mamirauá, Amazonas, Brazil.



living with the focal area of the reserve. The Municipalities are Alvarães, Uarini and Maraã. They have some responsibility to provide services in health (especially after the establishment of SUS – Sistema Único de Saúde – a type of national health system), education and environment, but their capacity to deliver is weak.

4.2 THE SIGNIFICANCE OF CONTEXT

The impact of MSDR's unique location on the nature of development activities cannot be underestimated. The context within which it lies has presented many new and difficult challenges. Any analysis of lessons learnt must take these contextual factors into consideration.

On the biophysical side, the fact that the reserve is only accessible by boat, and is flooded for six months of the year, when the water levels rise by 15 metres, seriously restricts access and travel. All travel has to be by boat, even between villages, which is time-consuming and costly. It can take more than 12 hours to get to the Horizonte Sector, on the Solimões river. The flooding regime means that lakes, creeks and beaches frequently move location (*terra caída*) and so communities frequently relocate homes, and this requires continual redefinition of resource use plans. The environment clearly defines what economic activities are possible. All fishing activity occurs during the low-water period, as during high waters the fish are too dispersed. Timber, on the other hand, is cut during the low waters, but can only be extracted during the high waters, when it can be floated downstream.

This ever-shifting and rather insecure environment means that *ribeirinhos* (riverine communities) are highly mobile. *Ribeirinhos* community composition changes frequently which presents challenges to the establishment of stable institutions and associations. To survive in such an environment, such peoples are highly resilient, but this can also make them inflexible and ‘hardheaded’ hence slow to change. It takes a long time before newly introduced ideas are accepted. At the same time, internal and external relations are based on a patron-client relationship. Debts owned can be so high that it is very difficult to break such relationships, and patrons might be the only source of medicines or other foodstuffs as only they have access to local towns and such supplies. This history of exploitation means that *ribeirinhos* are often highly suspicious of outsiders.

The institutional context is not very supportive of participatory and democratic approaches. Municipal level politics can be very ‘personalised’ and ‘oligarchic’. Local people have little, if any, understanding of their citizen rights and the rule of law is weak. Votes are often exchanged for favours, or other benefits such as food or diesel. A story heard in the MSDR area recounts how one politician gave one shoe to individuals within a community before the election and, if he won, the other shoe was given out after the election! There are also many jurisdictional conflicts, for instance permits can be issued by either the federal, state or municipal government causing much confusion on the ground, as well as opportunities for corruption. Bureaucratic processes are heavy and time-consuming, and there are precious few resources and a lack of capacity to deliver government functions. Added to this government institutions in Brazil have had difficulties in continuing programs and policies when there is a change in leadership due to elections or political substitutions.

In terms of policy and legislation, Brazil has supported some of the most conservative conservation legislation in the region (e.g. the Lei da Fauna). Only ten years ago, many environmentalists considered any mention of people living in protected areas heresy. This was perhaps exacerbated by Brazil’s general tendency to focus on internal experiences and not look towards learning from other regions’ experiences.

4.3 THE MAMIRAUÁ PROJECT

A team of Brazilian scientists – who had been conducting biological and anthropological research in the Mamirauá area during the 1980s – designed what has come to be known as the Mamirauá project. Due to its high biodiversity value, the area had been granted Ecological Station status in 1990 – a strict protected area category in Brazil – which does not allow any form of harvesting or human habitation. In 1993 it was also made a Ramsar Site¹⁵.

The Museu Paraense Emílio Goeldi (MPEG) and the National Secretary of Environment (SEMAN-PR¹⁶) – two institutions, who had been previously collaborating in the MSDR area, submitted a project proposal to DFID in 1990¹⁷. The concept was approved following an appraisal mission by DFID in 1991¹⁸, which based the project on the more detailed ‘Management Plan’ proposal¹⁹. Even before DFID approval, MPEG and CnPq (MG’s Federal line agency) shifted implementation responsibility to the Sociedade Civil Mamirauá (SCM) – an NGO, or private non-profit association, according to Brazilian legislation at that time. Placing SCM in charge of management was considered most appropriate given the range of institutions and donors involved.

The Mamirauá project objectives and budgets are detailed in Table 1.

15. Ramsar Convention on Wetlands, signed in Ramsar Iran, in 1971. It is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are presently 145 Contracting Parties to the Convention, with 1430 wetland sites, totaling 125 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance. Sites are selected by the Contracting Parties, or member states (<http://www.ramsar.org/>). MSDR inclusion in the Ramsar List can be considered also a result of the Mamirauá Project. The Project team made a request to the Brazilian government for selection the Reserve area as a wetland of international importance.

16. This institution was in charge of the federal environmental policy in early 1990s later replaced by the Ministry of Environment.

17. Museu Paraense Emílio Goeldi, Belém, Brazil and National Secretary of Environment (SEMAN-IBAMA) ‘Implementation of Estação Ecológica do Lago Mamirauá in the Flooded forests of Upper Amazonas, Brazil.

18. Armstrong, G., Flemming, S., Moberly, R., Payne, I. and Raw, A. (1991) Report of the Mission to Appraise the Mamirauá Ecological Station Project. 30 June – 12 July 1991. DFID Report.

19. Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Wildlife Conservation International (WCI) and World Wide Fund for Nature (WWF) (1991) Proposal for the Preparation of a Management Plan for the Estação Ecológica do Lago Mamirauá, Amazonas, Brazil.

Document	Goal	Purpose/Immediate objectives	Budget
1992 Project Memorandum Phase I	To assure the conservation of biodiversity in Amazonian flooded forest (várzea).	Conservation of biodiversity in the immediate focal area. Development of management techniques and production of a management plan. Improvement of livelihoods of local people through sustainable use methods and better social services.	£1.6 million from DFID over five years from June 1992 to September 1997. Additional contributions from WWF £0.5m; WCI £0.3m; CNPq £0.4m; EC £0.04m.
1995 Project Memorandum Phase II	Biodiversity of the Amazonian várzea flooded forest conserved.	To conserve and manage Mamirauá Sustainable Development Reserve in partnership with resident, users, local people and the Institute.	Approx. £2.8 million over five years from DFID from October 1997 to June 1992 and other contributions
Revised Project Logframe Phase II	Biodiversity of the Amazonian várzea flooded forest conserved and livelihoods secured.	To protect the biodiversity of the Mamirauá Sustainable Development Reserve whilst securing sustainable improvements in the quality of life of local people.	

Box 1: The Sustainable Development Reserve (SDR) Decree

The SDR was established by the Governor of the State of Amazonas as a Decree in 1996 specifically for Mamirauá – a category that did not exist at Federal level, and there was no official law. In July 2000, the SDR became recognized by the Federal Law (No. 9.985). This law also established the National System of Conservation Units (SNUC), and all protected areas in Brazil must refer to this law. There are now about nine SDRs in Brazil, mostly established at State level.

The SDR decree is sufficiently broad to allow for differences in interpretation. The SDR considers local populations as crucial agents of biodiversity conservation – it allows people to live within the area, and use the local resources as long as they conserve biodiversity. Sometimes conservation activity has direct livelihood benefit, as for instance in the fisheries sector. In other instances the livelihood benefit is indirect or long term, such as in protection of a core area, in Mamirauá this is where the Ucari monkey, and other unique species reside.

- Residents have the right to remain within the SDR as long as they comply with the management plan, which must be developed in a participatory way. The management plan should be revised every five years to ensure that it is up-to-date (this is particularly important where ecological conditions are frequently changing, such as in the várzea).
- The SDR allows for people to be removed if they do not comply with the management plan, but this can only happen with the individual's agreement.
- Residents can keep their land title, where it has been granted, which is not in many cases. (The issue of land tenure remains ambiguous, and in the process of being debated).
- Research constitutes a critical component of the SDR management system on the premise that information on trends and outcomes are essential prerequisites for effective sustainable management.
- Researchers wanting to conduct research within a certain area must gain the community's agreement first. If they misbehave in any way they can be denied future access.
- Any research conducted in the SDR must reconcile traditional knowledge with scientific research.
- Allows for a core area, which is totally protected from any use whatsoever, which is usually much smaller than the remaining area.

Following the Sociedade Civil de Mamirauá's involvement in the area as a result of DFID support, the Governor of Amazonas changed the status of the Area from Ecological Station (E.S.), to a Sustainable Development Reserve (SDR) in 1996 – see Box 1 – which allowed multiple use and human habitation in the area. This new conservation unit category was created because its proponents recognized that without involving local people in managing the reserve, its long-term viability would be threatened. Had this change not been made, the project would have to have operated illegally as an E.S. cannot be inhabited by human populations. The move to create this new category was extraordinarily progressive in a country where conservation legislation had been most conservative. The other key principle behind the MSDR approach was that traditional knowledge is valuable, but needs to work in concert with modern science if contemporary problems are to be adequately addressed. Thus research also plays a key role in the MSDR.

Phase 2 resulted in the creation of the MSDI – a privately run research institution (legally categorised as a social organisation). Falling under this category means that MSDI benefits from some public funding but is also able to search for other sources of funding. However, its objectives must contribute to 'public interest' issues. The Ministry of Science and Technology has issued a management contract to MSDI. Establishing such an institution has helped guarantee sustainability as given more permanence and a formal mandate to continue working in the MSDR. DFID funding ended in June 2002, but the Mamirauá project still continues.

4.4 THE MAMIRAUÁ 'MODELO' / APPROACH

The Mamirauá initiative has been promoted as a 'model' of how to carry out effective conservation in an area of high global and local biodiversity conservation value whilst at the same time improving livelihoods for the residents and users of the MSDR. It achieved this by developing a participatory management plan for the area, back up by scientific inputs, which identified where and how legitimate residents and users could use the natural resources within the MSDR, and in restricting access to those who did not have the right to access MSDR's resources. Agreements with local municipalities were signed and a community-based surveillance system put in place to ensure adherence to the management plan. Research on use impacts and thresholds for fisheries and forestry fed into the management plan, and marketing assistance was provided for fisheries. The introduction of alternative economic activities, such as ecotourism and handicrafts aimed to supplement incomes, and provide additional incentive for conservation and sustainable use. Political organization activities, which resulted in the formation of Village and Producer Associations constituted a core component of the work.

Mamirauá's aim was to establish a working model, which could be used to demonstrate 'people in protected area' approaches so that these could be replicated on a much wider basis in Amazonia. What Mamirauá stood for is summarized below:

- Mamirauá represented an 'evolution' in thinking on protected areas, research and people's participation, in Brazil. Through field action, research and high level advocacy, it created a new conservation instrument that allowed people to reside within protected areas, and its success on the ground encouraged other initiatives to use this instrument – it piloted the SDR protected area category, and there are now nine SDRs in Brazil. It also contributed towards the development of a new research policy for social organizations – government/NGO institutional hybrids – steering research approaches away from an 'ivory-tower' stance towards approaches that focus more on applied research that is more responsive to 'peoples' needs.
- Mamirauá focused on learning and knowledge building. It aimed to strengthen that understanding of how to practice sustainable use, and how to balance conservation with resource extraction. This is why research played such a key role. Mamirauá also aimed to create the information necessary for sustainable management of natural resources through combining contemporary and traditional science, i.e. 'building on best of both'.
- Mamirauá demonstrated and multiplied: it was one of the first attempts to devolve management responsibility for a protected area to an NGO. There were considerable risks in this for SCM, but their success meant that SCM evolved into the MSDI – a formal government research institution under the Ministry of Science and Technology. Given that

integrating conservation with livelihoods was a new concept, there was going to be much ‘trial and error’, particularly in the earliest stages. Hence Mamirauá’s focus on building a working model in a few areas, which would then serve to demonstrate, and ‘spread the news’ across a wider area, as well as reassure local people of their honest intentions.

5.0 LESSONS LEARNT

The lessons learnt analysis detailed below tries to capture some of the key lessons arising mainly out of the collaboration between SCM, later MSDI and DFID. It is important to note that these lessons are focused on how to reduce poverty and conserve the environment, or how to facilitate pro-poor conservation and build on real, and currently unrealised, poverty reduction opportunities within such areas.

5.1 CREATING AN ENABLING POLICY AND LEGAL ENVIRONMENT

There are few policy and legal precedents that demonstrate how to successfully conserve or sustainably use natural resources, in ways that also contribute positively to poverty reduction. Instead conservation and sustainable use activities have often involved blanket restrictions and so become separated from poverty reduction and economic development efforts. This has resulted in conflicting policy and legislation, particularly with regard to land management practices and resource access issues around areas of high biodiversity value, and a plethora of plans, such as Poverty Reduction Strategy Papers and Biodiversity Action Plans that bear little or no relation to each other. The pressure to minimise inconsistency and harmonise conservation and poverty reduction approaches is growing, as encapsulated by COP 7 of the CBD and the World Summit on Sustainable Development (WSSD)²⁰.

Until recently, Brazil had the most conservative conservation legislation in the South American region²¹ – legislation was exclusionary based on the principle that people and nature are incompatible – a belief that has conceptual roots in the North American deep ecology movements of the nineteenth century and not developing countries – but which has gained prominence worldwide. Many still believe that strict protection is the way forward, but in the last ten years there have been significant changes in thinking. In Brazil, in addition to the ‘no-people’ conservation units (Ecological Stations, National Parks, Biological Reserves, National Monuments, Wildlife Sanctuaries) the Sustainable Development Reserve concept, originating at Mamirauá, and also the Extractive Reserve concept, have been created. Both these concepts have tried to find a ‘middle way’ by providing a means for residents and/or legitimate users to use and benefit from the natural resources held within these ‘protected’ areas, as well as conserving them. There is, however, much work still to be done to ensure that access and benefit sharing arrangements for these areas remain fair and equitable, and dishonest and illegitimate interests do not usurp them. Furthermore, it is important to note that rationalising approaches to protected areas is only one part of the conservation and development agenda – there is much to do outside protected areas to encourage sustainable use of natural resources.

The lessons arising from MSDR provide some useful insights on how to change policy successfully in a complex political and institutional environment, on a highly contentious issue where there are many opposing views.

i) The sustainability and replicability of promising new approaches to sustainable livelihoods in areas of high local and global biodiversity will be undermined if policy and legal frameworks remain unsupportive of them

The project began lobbying to change Mamirauá’s Ecological Station status, from the outset. This is because the Ecological Station status, being the most strict conservation unit/protected area category, did not permit human settlements or any biodiversity use, including tourism. Only authorised research for educational purposes was allowed. Even though removing people from protected areas had occurred in other parts of Brazil, the Project Team recognised that resettlement was not a viable option for achieving successful conservation in the MSDR area. Firstly, the costs would have been astronomical and

20. See www.biodiv.org

21. Lichtenstein, G., Oribe, F. and Mazzucchelli, S. (1999) Sustainable Use of Resources in Mamirauá Sustainable Development Reserve South American Evaluating Eden study. Evaluating Eden Series. London: International Institute for Environment and Development.

level of outsider infiltration into the reserve meant that resettling the residents would not solve the problem, it could even make it worse. The Project Team believed that those most responsible for over-extraction and degradation of resources were largely unregistered 'outsider' fishermen or illegal caiman hunters, and not local people, so the main challenge was to restrict these groups' access to the area. This would not only lead to conservation benefits, but greater opportunity for local people to benefit from the local resources, as they would no longer suffer external competition.

Given that significant investments were planned for the MSDR, the project could not continue without securing legal access for legitimate residents and users, and their livelihood activities. Otherwise SCM could have been thrown out of the MSDR, and if not, activities could have been easily discredited by anyone not supportive of the project – particularly those who stood to lose out as a result of the Mamirauá project who could find useful allies inside and outside the reserve. Threats from these groups have, incidentally, continued throughout the course of the project, but making it legal prevented disputes over the project's absolute legitimacy, even if it has triggered many other debates and gossip. Maintaining credibility has been important to allow the project to continue lobbying for other policy and/or legislative changes.

Securing rights of access for legitimate residents and users of the MSDR was also important to allow these groups to live without constant threat of resettlement, being fined or imprisoned as a result of their daily subsistence and livelihood activities. Without this, the incentive to invest in sustainable improvements by the local people is virtually non-existent as there is no guarantee of return. Poor people facing constant livelihood insecurity cannot afford to conserve the environment, or adopt alternative, (possibly more risky), livelihood strategies, unless this yields direct and useful benefits. Furthermore, if use is not legalized the products cannot be officially traded in the market place, and residents must rely on 'patrons' who have free license to set prices as they will as they are not controlled by any independent authority.

ii) Proposals for policy and legislative reform have to balance stakeholders' needs with politicians' interests and government priorities for the greatest chance of success

There is a growing body of experience around the world regarding people and protected areas, many of which propound community collaboration in the management of protected areas, such as Joint Management, Co-Management, Community-Based Natural Resource Management. These may be considered the 'best' technical option for a way forward, but in some places they may not be politically feasible or institutionally possible. Therefore the 'best option' has to be moulded around what might be socially and politically acceptable, and practically feasible, and so the 'best available' option, rather than the 'best option' becomes the only way forward.

The Mamirauá approach was fortunate to have captured the Amazonas State Governor's interest. He had a lot of personal power, and so once he was behind it, the state assembly supported him and voted in the Sustainable Development Reserve Decree (see Box 1). The Governor was keen to act on this issue, as he had been previously criticised for his poor environmental record, but he had no patience with hard line conservationists who just wanted to stop all development. The SDR concept, however, provided him with several opportunities. It enabled him placate his critics in a credible way – he could argue that he was conserving biodiversity as well as addressing livelihoods without having to resettle people – and he was addressing a real dilemma. It also helped him gain independence from Federal government and gain State authority over the Mamirauá area, a move that he warmly welcomed. The Mamirauá case shows the importance of involving key politicians from the earliest stages.

iii) 'Public Relations' helps convince politicians and decision-makers that change is necessary, but targeted promotion is needed where the stakes are high

When addressing an issue as controversial as allowing people to live and use resources within protected areas, it is worth investing time to build a strong network of support for the proposed changes. Having support can help garner wider government and political ap-

proval. The government is often faced with the people and parks dilemma, however, it often does not act due to the highly polarized views on the best way forward and fear of criticism. It also faces considerable pressures from the strong and very emotional ‘parks with no people’ lobby which can be well connected with international media to maintain the protectionist stance. Such non-action and policy ambiguity might allow the government to please both groups, but it also causes confusion. Breaking through this delicate balance, and encouraging government to deal with the issues can be very tricky. Mamirauá succeeded convincing the Amazonas State government that change was necessary. The Mamirauá team also managed to get the SDR into the National System of Conservation Units (SNUC), another significant gain.

Mamirauá had also advertised itself widely using various channels – many scientific papers were published in high respected journals and presentations made at key conferences. This strengthened Mamirauá’s reputation within Brazilian and international research networks. Márcio Ayres – SCM’s and the Mamirauá project’s director – was then able to use these networks to his considerable political advantage. He also managed to attract film crews and journalists from Brazil and overseas – various TV programmes and magazine articles ensued which helped raise Mamirauá’s profile. Such ‘awareness raising’ required politically astute marketing skills, an ability to sell an idea or a vision in a credible way, which Márcio Ayres was very adept at doing. It was also very time consuming and required considerable personal investment. It is important to note, however, that none of the above could have been possible if Mamirauá had not been a credible and quality product in the first place. Mamirauá had a lot to offer and Márcio Ayres managed to capitalize on this in a very smart and skilful way.

Mamirauá became a widely known and high profile project. This must have also helped Mamirauá lobby for policy and legislative change. Many Brazilians wanted to be associated with it. Mamirauá’s ‘applied’ and ‘socially-focused’ research approach was also novel in Brazil. In 1999, the Mamirauá Sustainable Development Institute was created and was recognised as a ‘Social Organisation’ by the Brazilian government, which gave Mamirauá private-public institutional status. A ‘management contract’ was signed with the Ministry of Science and Technology in 2001. Thus, Mamirauá became one of among a set of research institutes linked to the Ministry. Awareness of its success even influenced and convinced the high-profile Tundisi Commission. The Tundisi Commission, headed by Professor José Galizia Tundisi, involved a group of highly respected Brazilian scientists and professionals, and was commissioned by The Ministry of Science and Technology to evaluate all the national research institutes linked to the Ministry²². The Tundisi Commission was much impressed by the Mamirauá Institute particularly around the strategies adopted for technological development and knowledge transfer to the local people. The Tundisi Commission Report recommended that cases such as Mamirauá should be strengthened and multiplied. It also recommended that Mamirauá model should be replicated as it provides an excellent examples of socially significant research²³.

Unfortunately, ‘PR’ at the municipal and local government levels, where the potential losses from the Mamirauá project were far greater, proved to be more complicated. There were some attempts at gauging local opinion, the stakes at this level were far higher, especially as the illegal fishermen had much to lose as did the powerful individuals who benefited from the patronage system. Various stakeholder meetings were held, as early as February 1993, where an agreement was written and signed between the MSDR General Assembly and the local and federal authorities – with IBAMA, EMATER, Capitania dos Portos (the ports authority), the Army, Military Policy of Uarini and Tefé, representatives of the Prefeitura (the municipal executives) of Uarini and Alvarães, Parishes of Alvarães e Uarini Evangelical Churches, “Assembléia de Deus” church, also present. Meetings were also held with the Tefé Fishermen Association, and according to one report²⁴ one of the decisions was that Uarini and Alvarães Municipalities and Tefé Fishermen Association should put forward a proposal for using the Reserve with the communities (Setores). In later years, significant efforts were made to improve the project’s image in Tefé. The project participated in and made presentations in local fairs and cultural events (‘Mamirauá na Praça’). It also promoted events and competitions in local schools. A twice-weekly radio programme ‘Ligado no Mamirauá’ run by the project, also gained in popularity.

22. “PORTARIA Nº 137, DE 04 DE ABRIL DE 2000” from the Ministry of Science and Technology established the Commission which gathered 72 external specialists that worked during five months. The Tundisi Commission report was issued in 2001.

23. The Tundisi Commission stressed the importance of basic research in Amazonia, particularly socially significant research.

24. Projecto Mamirauá Progress Report # 2 October 1992 – March 1993

Many of these activities helped improve the project's image, however, resistance to the project remained high among well-connected individuals in the local area, and this proved to have negative effects for Mamirauá. The local politicians were not interested in helping to resolve the many conflicts arising between the urban-based fishermen and residents and MSDR residents and users. Whilst the project won much support, it was impossible to please everybody. Clearly, whilst the first priority should lie with the affected communities, the concerns of the interested stakeholders, or those with most to lose should also be taken on board, by whichever means possible.

iv) Where democracy is weak and external organisations have to lobby on behalf of local people there is a trade-off: the organisation's agenda can feature more than the views of the local people, but without such external stimulus, change is unlikely to happen

The Sociedade Civil de Mamirauá was the NGO that had arisen from the various activities organised in the Mamirauá area. The social context within which SCM was working in Mamirauá presented many challenges, particularly in the initial stages. Given these challenges, concerns were raised by DFID over SCM's social development capacity. SCM carried out extensive anthropological studies in the area, and had a good understanding of the context, however, starting up a development project was not easy. Initially the project provided various services to the communities, as this helped build relationships between the project and the communities, and without such support it would have been extremely difficult to garner support for the project, given the very high levels of suspicion of outsiders among local people. DFID however remained concerned that the approach the project adopted was not entirely appropriate, and the issue of social development became a point of contention between DFID and the SCM throughout the project. The challenges and response adopted by SCM were, however, much the same as those made by hundreds of other externally-funded projects operating in marginalised areas.

SCM's primary interest in the area had arisen mainly out of the biological value of the area, but SCM was always totally transparent about this. And they made sure that their interest in biodiversity benefited local people. For instance, quite a number of biological studies were carried out in Phase 1, some of less relevance to local people, but others focused on how to sustainably use the resources upon which local people depend. As described in section 5.1 (iii) this research later helped Mamirauá gain credibility and the ability to argue for the need for policy change. The Mamirauá team were quick to recognise that there was convergence between their interest in conserving the biodiversity, and particularly the habitat of certain endemic species, and local people's interest in improving their access to fish and timber resources. Conserving the endemic species habitat, for instance by restricting access to commercial fishing vessels, also improved the fishery and the benefits to be derived for timber extraction.

Mamirauá thus helped moved thinking away from total protection and resettlement to one of integrating people with protected areas, and away from pure to more applied, or people driven research and the positive poverty impact this has had – not only in Mamirauá but also in Brazil – should certainly not be underestimated. The Mamirauá project may not have provided the perfect model, but without it 'social' protected areas policy may well have been further behind in Brazil.

v) Where there are different policy and legal options targeting similar issues, these should be structured to complement and not conflict with each other

Two people and protected areas categories have arisen alongside each other in Brazil: the Sustainable Development Reserve (SDR) and the Extractive Reserve (RESEX). There has been much heated debate in Brazil over which is better. This conflict has its roots more in the desire to gain political supremacy, hence resources, than the quality of the concept itself. Both are equally valuable and valid concepts: they each address different contextual circumstances. In a country as large as Brazil, which operates under both a state and federal system of government, it is not at all surprising that different options have arisen and it is unfortunate that the SDR has been made to compete with the RESEX approach. Those who developed the SDR – the Mamirauá project team – insist that each category suits dif-

ferent conditions and so should, therefore, be institutionalised in such a way as to be complementary not conflictual.

Before developing the SDR, the Mamirauá project team did review other 'legal' options available in Brazil, which would allow people to live within an area, and also make sufficient provision for conservation. These included: Environmental Protection Areas (APAs), Extractive Reserves (RESEX) and National Forests (FLONAs). Neither was considered suitable – the RESEX was close but RESEX categories more often applied to areas of lower biodiversity value and have specific requirements. SDR was created because it is better suited to an area where there is high global as well as local biodiversity value, and uncertainty over appropriate management options. The RESEX, on the other hand, originated in areas where the biodiversity value is primarily local. These differences were essentially an extension of their historical origin – the Extractive Reserves came out of the rubber tappers' movement and so, on the surface, RESEX is more 'people' and 'use' driven but holds certain restrictions. The SDR, on the other hand, with its origins in Mamirauá, is more 'people' and 'research' driven but allows a much wider diversity of products to be used and extracted. Table 1 (see page 30) demonstrates that each category has a specific niche to fill.

5.2 ADDRESSING THE GOVERNANCE GAP IN MARGINALIZED AREAS

Institutions, able to organize and represent peoples' views and interests, and represent them in higher-level political and decision-making fora, are critical for successful sustainable livelihoods development. The role of local institutions is also to disseminate relevant information, and develop an agreed a system of 'rules' and monitoring, that generate fair and equitable benefits, in a sustainable way.

Developing representative and robust institutions in an area such as MSDR, where local people's interaction with the outside world typically occurs through a patron or *regatões*²⁵, is especially important. The absence of more formalized local institutional organization provides the space for the *regatões* to wield an inordinate amount of power. Consequently, it is very difficult for the individual to break their dependency on the *regatão*, as he most often is the only trading link with the outside world. Without the *regatões* the residents cannot market their products externally, and have no alternative means of purchasing essential items, such as medicines and fuel. Whilst this inequity in the power base continues, generating equitable and sustainable livelihoods will be extremely difficult. The Mamirauá project has attempted to break these patronage links through participatory and political organization activities and the creation of a variety of community associations through which products could be marketed²⁶.

The challenge of establishing new trading relationships and moving towards democratic decision-making processes in complex social and ecological situations, as in the MSDR, should not be underestimated. Similar initiatives in other parts of the world have also struggled (CAMPFIRE in Zimbabwe, Luangwa Integrated Resource Development Project in Zambia²⁷). It is only after 20 years of investment that signs of sustainability are appearing! However, because there have been difficulties that does not mean that such work is inappropriate, as some have been wont to argue.

i) Build on any (pre-) existing institutional and social development processes

The Mamirauá project was not the first attempt at social and institutional development. The Catholic Church's Movement for Basic Education became active in the area in the late 1960s in an attempt to bring the communities more into the mainstream. Up until the Church's involvement there had been a complete absence of any form of community level political organization, with external relations being based on the exploitative patron-client alliance. The Church's work led to the establishment of an institutional framework – whereby neighbouring communities were grouped into sectors, for administrative and religious coordination. Sectors were then coordinated at annual Assemblies held by the Prelacy of Tefé. This work evolved into the Movement of the Preservation of the Lakes, which began to establish a basic lake zonation system.

25. *Regatões* live throughout the Brazilian Amazon and are characteristically outsiders that go into the communities, try to build a relationship with the locals and then exploit them by getting their products (e.g. fish, manioc, rubber) at a very low price, or exchange their products for industrialised or other ones they do not have access (e.g. sugar, rice, medicines diesel) for a very high price. Thus the local populations turn dependent on outsiders for links to markets.

26. Gillingham, S. (2002) Social Organisation and Participatory Resource Management in Brazilian Ribeirinho communities: A Case Study of the Mamirauá Sustainable Development Reserve. Amazonas. *Society and Natural Resources*.

27. Child, B. and Dalal-Clayton, B. (2001) Transforming Approaches to CBNRM: Learning from the Luangwa Experience. Available from www.iiied.org.

Table 1: A few thoughts on SDRs and RESEXs		
SDR	RESEX	Comment
The SDR assumes that there is still much scientific uncertainty over how to practice sustainable management and so research plays a key role in improving understanding of how to do this effectively.	The RESEX assumes that people's needs, preferences and views are sufficient inputs for sustainable management of the area.	The RESEX approach is clearly more people driven, which has advantages and disadvantages. Local people may be very knowledgeable in natural resource management, but sometimes their knowledge needs to be boosted by external scientific inputs, hence the stronger focus on research in the SDR. The challenge in the SDR approach lies in ensuring research is relevant to management, as some researchers have the tendency to pursue their own intellectual interests.
There is provision for a core protection area, where no use is allowed, however, local people must be involved in decisions over which areas are to be protected.	There is also provision for a core protection area..	It seems that the core area in the SDR serves two purposes – to protect the ecosystem so the local resources (e.g. fish and timber) are sustained for people's well-being and to protect biodiversity of global value, e.g. endemics. The purpose of the RESEX core area seems to focus on sustaining resources of local value for the purpose of local use. As many RESEX's are located outside areas of high global biodiversity value, whereas the SDR originated within a globally valuable area, this rationale behind each core area makes sense.
SDR land tends to be state owned land, however, the issue of land ownership is complex as land near certain rivers (e.g. Japurá and Solimões) is federal land.	RESEX land is owned by federal government.	RESEX has its origins in a struggle for land, therefore turning it into a federal area was a way to secure land tenure for the rubber tappers. The SDR originated in an area where there was no threat from migrants (farmers/ranchers) rather external users of the local resource (illegal fishermen). Making SDR state land also increased the attractiveness of the concept to the state administration. Most SDRs established have been on state land, however, it is also possible to have a 'federal' SDR.
Specific arrangements over individual ownership of land, and exactly who should gain access to resources remain unclear, however, residents and local 'users' have the right to remain as long as they comply with the management plan, which has to be drawn up in a participatory fashion.	It is unclear whether there are any specific requirements (by law) over people's participation in management planning.	The danger is if the management plan formulation is not participatory. Even so the SDR statute requires a revision every five years, which could help prevent the persistence of a blueprint, as long as people are properly informed of their rights.
Any research activities in the SDR have to consider traditional knowledge and the history of the people and the law requires that all research to attempt to reconcile traditional and contemporary scientific knowledge.	There is no specific research mandate in the RESEX, and managers rely mainly on local people's knowledge.	See comments above.
Guarantees usufruct rights to natural resources for local populations, thus enabling them to engage in economic activities from which otherwise exempted, as they would have to provide land ownership documents to acquire this right.	There needs to be a 'traditional population' present for exploitation to be allowed. 'Traditional populations' are defined explicitly by federal law, and non traditional members will not be allowed to use the resources.	The SDR is more flexible in allowing all residents of an area to exploit the resources, not just those restricted to a 'traditional population'.
The SDR allows trade in a diversity of products and there is provision for negotiating with outside traders.	The RESEX is quite restrictive in terms of what products can be extracted – only those which are traditionally part of local livelihoods. To protect local users, there is less flexibility to trade with outsiders.	The SDR is perhaps more flexible in that it allows for trade in a greater diversity of products than does the RESEX. However, the RESEX originated in a more uniform ecosystem, i.e. one that focuses on rubber extraction. Therefore, it appears that SDR is better suited to more diverse ecosystem, where the extraction or production of several resources is possible, whereas the RESEX is better suited to a more uniform ecosystem, where the majority of production focuses on a single resource.

This work lay the foundations of, and provided a critical entry point for, the Mamirauá project, which built on the organizational structures initiated by the Catholic Church. The project also engaged the ‘community promoters’ who had worked for the Catholic Church at that time, as many communities were already familiar with these individuals. The Catholic Church’s initial work clearly provided a very important springboard in a difficult working environment.

ii) When faced with a difficult physical and social environment, go in through the easiest entry point and make sure activities spread outwards along the paths of least resistance

The risk that the communities would reject the Mamirauá project was always high, given the distrust for outsiders. Given that the project was trying to redress the power imbalance between the local people and the *regatões*, the latter group was keen to prevent change, and so repeatedly tried to garner anti-project support throughout the reserve and its surrounding communities. The extensive kinship networks that exist around MS DR meant that it was relatively easy to establish a community of support for an issue, as families of the same kin would immediately express solidarity for each other. Particularly in the initial stages, the project had to tread very carefully: any ‘bad’ behaviour could easily whip up a community of support with severe implications on project progress. For instance, after a researcher from Manaus got permission to take several caimans out of the MS DR for research purposes, the story on the ground was that Mamirauá was a ‘foreigner’s’ project that was building a tunnel to Japan through which they would extract all the fish, dolphins, manatees and uakari monkeys²⁸ – even though the research was not strictly connected to the project itself!

28. Ronis da Silveira personal communication.

Fortunately, some key members of the Mamirauá team had previously conducted research in the MS DR, and so they had built close contacts with residents in the south-eastern part of the MS DR (e.g. Boca do Mamirauá). This was an obvious place for the Mamirauá project to start, as there was already a higher level of familiarity, openness and trust between the local people and the project team. Given the very long distances (making travel distances long and costly in diesel) the southernmost part of the MS DR was also the most easily accessible and so project staff could visit the area more frequently. Activities also focused on Japurá Sector, on the Japurá River. The Church had done much previous work here and the communities were more organized and prepared for external interaction than in other parts of the MS DR.

It took the project a long time to spread activities to the more remote, westernmost parts of the MS DR, but it was the project’s intention to first establish working models in one part of the reserve before spreading to other areas. Long distances, a harsh working environment, where floods prevented frequent travel to the northernmost areas and so the logical place to start was in the south. Local resistance to project activities in the north, and not enough staff, also constrained wider uptake for quite some time. The project found it difficult to recruit the right individuals and was concerned that if too many were hired, it would have to dismiss these staff once DFID funds ended. Despite DFID’s insistence, additional staff were not therefore employed and this became an area of disagreement between the project and DFID. The project also tried to argue that the situation was still too delicate and unstable within the MS DR and employing too many extension workers might disrupt the delicate balance between the MS DR residents and the project.

iii) Any external agent promoting institutional development should work with existing structures and instil independence from the outset

To accelerate health and education activities, the project took on independent health promoters and environmental education teachers. In doing so, it took on government’s responsibility in the area. This approach was not sustainable as it depended on project support for such personnel and activities, but it did succeed in winning immediate support for the project. During the course of implementation, the project team realised that, to better guarantee sustainability, it should work more closely with the existing structures to identify how these institutions could begin to provide health and education support to the MS DR in the long term. Other extension staff were also paid by the project, and with the end of DFID funding, whilst some extension staff have been kept on, others have been made redundant. The same problem applies to the community promoters, who were paid

by the project for their work, and received fuel for transport. Whilst such support could be more easily justified for community work, as once institutions are established and people become more politically aware, then the onus falls onto the community institutions rather than outsiders to cover the cost of the work.

The project also established a very effective, if costly, infrastructure throughout the MSDR (floating houses, short wave radios, speedboats, etc). Partly because it would have been impossible to implement the Mamirauá project objectives without this, and partly due to pressure and needs to produce results for application elsewhere. However, it is unlikely that other areas in the remote Amazon will be able to establish such infrastructure and whilst the project was able to demonstrate impact as a result of this, more thought need to be put towards how to replicate such a management system in a more cost-effective way in other areas.

Mamirauá also funded the participation of community representatives at the General Assembly meetings, i.e. transport, meeting room, accommodation and food. This approach might have been important initially to enhance participation and remove cost burden from communities, however, once they were convinced of the value of such work, project support for such meetings should have been phased out more quickly. That said, the General Assemblies continued to meet at their own cost after the closure of the DFID project in June 2002²⁹.

29. So far, the communities themselves organised and held their General Assemblies in 2003, 2004 and 2005.

iv) Institutional development in marginalized areas requires patience, perseverance and consideration for cultural differences – ‘go slowly and gently but stick with it’

Work in areas where there are complex social structures, with people who have had years of empty promises, whose trust for outsiders is shaky, where illiteracy levels are high, and where there is a lack of knowledge about institutional development, requires very special skills. Patience and persistence are essential qualities for such work, as it takes time for new ideas to be debated, thought through and accepted or modified. Rural communities’ time horizons are very different to that of ‘professionals’ – key people in the community have to be consulted and this can take time. A lack of response does not, therefore, mean a lack of action. One Mamirauá staff member, Paulo Roberto, spent a whole year in Aranapu and Barroso, villages which had been very antagonistic to the project at the outset, in fact so hostile that project boats moored to the riverbank would be cut loose. He described that it was only after months spent interacting with the villagers, taking part and demonstrating an understanding of their lives, describing his own and why he was there, that it was possible to build the trust necessary for effective and sustainable institutional development. This was an incredible personal investment, but it worked extremely well. This village has moved from rejecting the institutional development work the project introduced to having established and functioning institutions.

Finding the right people for such institutional development work – who are able to combine their technical knowledge, with an appreciation of local norms, and who are prepared to spend months away from their homes, in rural areas, is not easy. They are rare individuals, but Mamirauá managed to attract quite a few such committed people. However, as there are not many with these special skills, and so the project continually experienced staff shortfalls, which hampered project progress. Given these difficulties, how could the project have moved forward? Perhaps the project could have spent more time seeking out people from the local area who could work with the project, such as the community promoters – after all there were only six, one for each sector, five³⁰ who had been engaged by the Church from the local area, and one non-local who was employed by the project. Perhaps the project could have provided more creative incentives for good staff, who did not want to spend weeks or months in the MSDR?

30. Seu Afonso, Seu Antônio Martins, Seu Vavá – left 2002, Oscarina e Antônio Marino.

Some of the most important factors for success in institutional development include: facilitating an exchange of ideas, offering new, but not too radical, information and perspectives, and allowing people to voice their concerns. This does not cost much more than a staff salary and logistical support. Such activities do not need lots of money, at least not in the initial stages, but they do need the right sort of person. That said, additional resources can help communities make certain improvements in later stages, but it is impor-

tant not to swamp communities with funds early on – a visible donor presence can warp expectations and possibilities. Such approaches do however take time to deliver results, which often conflicts with donors' time horizons.

v) It helps to link institutional development with livelihood activities, as the latter promises tangible benefits

Communities living in highly dynamic and uncertain circumstances are unlikely to want to participate in institutional development activities unless they see a clear and direct livelihood return. People living within areas, such as Mamirauá, have little awareness of their rights. This combined with a lack of transparency and accountability within local politics makes it hard for democracy to work at all.

Making sure that institutional development at the community level is relevant to people's livelihoods is key. The Mamirauá project chose to help strengthen producer associations for fish production and forestry. Given that these producer associations were directly relevant to the local people, levels of participation were high. As the communities' have become better organised, as a result of these activities, they have in turn become politically more united and even lobbied local government to address their needs more effectively – or at least voice their concerns with 'one voice'. Some communities have even managed to gain better health and education services as a result of this more organised lobbying – the local government is even paying the community health promoters within the reserve.

The positive impacts on community identity and individual self-esteem of such activities have been significant.

vi) Bringing the most marginalized groups into the process should be managed cautiously and sensitively, otherwise there is a high chance of rejection

Gender roles are distinctly different within the MSDR, and have remained so for hundreds of years. To outsiders, women from the MSDR might appear submissive and passive especially in public. It is true to say that the majority of women are not used to speaking out in public fora, but this is mainly because, according to local customs, it is the husband's duty to consult his wife on her views, and then voice them in public. The Mamirauá project aimed to make women's participation more active, and more visible. However, this process had to be managed cautiously, as the risk of woman-oriented activities being forbidden by the local community was high. Some men were of the view that new ideas might cause women to "rebel". As the family is the most solid institution within the MSDR, disrupting the family unit could have many negative effects, and reflect badly on the Project. The project successfully recognised that changes in gender relations would take time and be respectful of cultural differences and attitudes.

The project started 'gender' work through non-political structures, such as the Mothers' Associations, which had already been established by the Catholic Church. There was a focus on confidence building and awareness raising among both men and women. This approach may have been rather conservative but was the best way forward given the circumstances. The Mothers' Associations slowly evolved and began to engage in political and economic activities. There are now several women throughout the MSDR who are secretaries to Village Associations. At Boca do Mamirauá the Community Association President is now a woman. There are also three very active women's income generating groups making and selling handicrafts, at Vila Alencar, Boca do Mamirauá and Japurá. The fact that women bring in money has also helped raise their status in the family, especially when women receive an income outside of the fishing season. Out of 16 producer associations, only one has no woman as member.

5.3 RULES ENFORCEMENT AND SURVEILLANCE

An essential part of any sustainable natural resource management programme is a surveillance system. There have been many technological innovations in surveillance, for instance remote sensing techniques are increasingly used to monitor farmer's land use

practices in the UK. However, in other parts of the world, or in other ecosystems, surveillance presents many challenges – usually on account of financial constraints and logistical difficulties. The Amazon – IBAMA – has responsibility for surveillance, but the vast distances involved, the costly and time-consuming nature of boat travel and the lack of funds, manpower and equipment, means that the huge areas of the várzea are not being covered in any meaningful way. For instance, it is 500 miles as the crow flies from Tefé to the Peruvian/Colombian border, and IBAMA Tefé has to cover this vast area with a meagre budget and a very limited number of staff. To try and tackle this problem a system of Voluntary Environmental Agents (VEAs) has been introduced all along the Amazonian várzea. The VEAs are from the riverine communities who carry out surveillance on a voluntary basis. To enable them do so, they receive training and accreditation from IBAMA. The Mamirauá project also introduced this system.

i) Rules should be formulated and negotiated in a participatory way, with all key stakeholders, and allowance made for periodic modification

Establishing SDR status meant that all those residing outside the reserve, who did not have legitimate access no longer had the right to fish or extract timber in the reserve. In 1993, the first general assembly established who could utilize and trade in the reserve's resources – this included those living within ('residents'), and on the boundaries ('users'). All local stakeholders were invited to the assembly to present their case and the assembly decided, by vote, who constituted the user group. This process included the local municipalities. As there had been many external users the agreed restrictions created some animosity towards the MSDR, particularly from some of the small towns around the area. Initially there were frequent illegal incursions, even though an agreement had been signed with the local municipalities, but after 4-5 years these incursions became much less frequent. The decision over who to restrict was based on extensive mapping of the resource and its use by the project from as early as 1991.

Dealing with the 'illegal' unregistered' fishing interests, who organise frequent incursions to extract large quantities of fish and timber also presented many challenges. These more rogue elements – who are part of an Amazonian 'mafia', that engage in many other illegal activities, such as drug trafficking, have been much more difficult to control, as they are not associated with any formal institution and because they are often violent. Many of these illegal players have been supported by powerful local politicians, even the police, making it even more difficult to charge and prosecute them. Those who have tried to place barriers in their way have received death threats. Involving such elements in participatory planning and agreements is very difficult, and yet they often do most damage. MSDR's high profile throughout the country did, however, dissuade such groups from entering the area as the risk of being exposed became too great.

ii) The means by which local volunteer environmental agents are compensated has to be sustainable

The MSDR project adopted the volunteer environmental agents (VEA) system, but has been paying for the VEAs fuel and providing a daily allowance, even through the project recognized that this was an unsustainable practice. Normally the State would have been responsible for paying for surveillance and so the Mamirauá project engaged in negotiations with the Amazonas State Government to encourage them to take over – IBAMA became involved in the training of VEAs and IPAAM occasionally engaged in surveillance activities. In the absence of State surveillance, the project knew that it would have taken years to convince individuals to participate in surveillance without some form of compensation, as there are few returns from surveillance. Moreover, surveillance is dangerous and time consuming, and takes individuals away from their daily livelihood activities. The Mamirauá project believed that, whilst many VEAs gained in social status, it was unfair for the individual to bear all the costs of surveillance whilst the wider community benefited.

Even if Mamirauá can continue to fund the surveillance system for a few years, the State's inability to get involved is disappointing. As expressed in one report: '*In view of the con-*

*tinuing lack of operational resources and manpower available to IBAMA and IPAAM, it is considered that it will take many years before these institutions are able to properly protect and manage the protected areas of Amazonas State*³⁴. The Mamirauá/Amazonas situation is not however unique. The issue of safeguarding natural resources against a backdrop of growing human needs presents huge challenges in most developing countries, and the Mamirauá examples provide many important lessons on how to establish such a system under very difficult and complex circumstances.

In the Mamirauá case, however, sustaining the surveillance system locally is possible. Mamirauá's fishery is rich, and the gains derived from its sustainable management could be easily channeled into paying the VEAs. There have been a few isolated cases in the MSDR where community associations have taken responsibility for their own VEAs, for instance VEAs are given a larger fishing quota than others, or are excused from other communal activities. However, in addition to a community-financed system, the Federal Government and Amazonas State should consider how they could provide more support, as surveillance also generates wider public, national and global benefits. It should not therefore be just the community who takes on this responsibility. However, whilst government resources remain restricted, the only way forward is to pay for it locally.

The Jarauá sector of the MSDR has accepted this responsibility – on hearing of the withdrawal of DFID funding they held various meetings to work out their strategy for operating the Fish Marketing and Piraracu Management Projects, including surveillance activities. Each member of the Jarauá Producers Association will pay a levy to the operating fund, which constitutes: 13kg Piraracu, 10kg Tambaqui, 10kg of large catfish and R\$2/month. In the Mamirauá sector, some of the profits of the Ecotourism programme also pay for surveillance expenses in the MSDR.

iii) Monitoring and enforcement works best as a partnership between affected communities and formal authorities

Whilst communities in areas such as Mamirauá may be able to maintain the VEA network, it is less likely that they could afford the infrastructure based on local revenue, e.g. radios, boats etc. VEAs do not have powers of arrest, and in Mamirauá the distances to the nearest police post are so great that radios have provided a vital link with the police and IBAMA in Tefé and other neighbouring municipalities. However, the dilemma of how to pay for such infrastructure remains. Would government be able to cover the establishment costs, if not running costs? Could donor funds be channelled into establishing surveillance networks, but not running them? Or should we accept a less perfect but lower cost system, where there is no expensive equipment, and where VEAs carry out surveillance activities, and report serious or repeated incursions by whichever means there are available? A locally resourced and managed VEA system is likely to deter smaller scale poachers, however, it is less likely to prevent the 'rogues'. Only proper government, political and police back-up can stop the worst offenders.

iv) Work towards expanding an affordable monitoring and enforcement system over a wider area as well as tackling the problem 'at source'

To safeguard wider ecosystem values, it is not enough that only a small proportion of the entire ecosystem is protected. Mamirauá's surveillance system has effectively protected the MSDR area, and there is some evidence that surveillance has benefited neighbouring areas, and demonstrated the value of surveillance to local people. However, unsustainable users of the resource have simply shifted their activities to other 'unsurveyed' areas. The Mamirauá approach must therefore be scaled up over a wider area, using local resources to cover the local costs of surveillance. However, if external demand for these resources remains strong and undiscerning of extraction methods, then surveillance and sustainable management can only go part of the way. The problem of 'over-use' also has to be tackled at source, i.e. consumers have to become more aware of their consumption patterns and more cognisant of where their products are coming from, and whether or not the products have been sustainably produced.

34. Armstrong, G., Flemming, S., Moberly, R., Payne, I. and Raw, A. (1991) Report of the Mission to Appraise the Mamirauá Ecological Station Project. 30 June – 12 July 1991. DFID Report.

The challenge of establishing a sustainable use system across the whole várzea and other ecosystems in Amazonia is hugely challenging. Among the PPG-7 initiatives there is a 30 million USD project (funded by the German Government, the Rain Forest Trust Fund run by the World Bank, the EU and the Brazilian government) to create Ecological Corridors in the Amazon. (The ecological corridors concept was one proposed by the Mamiraua team, based on the Mamiraua experience.) The aim is to link up the various conservation units within the area using ‘corridors’ that would allow for greater mobility of species, hence genetic exchange, and protection of wider ecosystem services – thus proposing sustainable management for about 25% of the entire Amazon. This approach encompasses conservation, sustainable use, monitoring and surveillance. Two corridors are currently proposed: in the Atlantic forest and in Central Amazonia. The latter covers nearly 20 protected areas and vast intermediate areas, including Parque Nacional do Jaú (Jaú National Park, linked to IBAMA but run by an NGO called FVA-Fundação Vitória Amazônica), Amanã SDR, and Mamirauá SDR (both run by IDSMM-Mamirauá Sustainable Development Institute) – almost 20 million hectares. Negotiations have been tough and have taken about 5 years. It has proved difficult to integrate the different institutions, actors, three different Conservation Units involved, as well as the various land uses, protected areas, buffer zones, indigenous lands, private lands etc., into an all encompassing, comprehensive plan. This has involved getting agreement conservation and sustainable use methods, common approaches to surveillance and monitoring system etc.

5.4 DEVELOPING MANAGEMENT FRAMEWORKS FOR CONSERVATION AND SUSTAINABLE USE OF FISH AND TIMBER

Two separate analyses were conducted during the consultancy to draw specific lessons from the fisheries and forestry experience. Summaries of the lessons are detailed below, and full reports are found in Annex I and II.

5.4.1 *The Mamirauá community fisheries experience*

Community-based fisheries management was an important part of the Mamirauá project. The emphasis was on community-based fisheries management, as practised in other parts of Amazonia. That is, building on the zoning and lake rotation system previously introduced by the Catholic Church during the 1970s. It involves not only stock regulation, and zonation, but also social development and organisation of the fisherfolk. As part of the overall Mamirauá project lessons learnt process, Brendan Dhalley, DFID Fisheries expert, carried out a distinct piece of work specifically focused on pulling out lessons from the community based fisheries work. The following is a summary of these lessons (see Annex I for a more detailed analysis):

- i) Using an established and familiar method of resource management ensures greater acceptance with consequent participation and thus greater chance of success and sustainability;
- ii) Concentrating on a particular area to establish a successful model of resource management is more likely to stimulate replication through popular demand and is a more efficient way of using available resources;
- iii) Well considered choice of the initial target community/sector is essential for the eventual success of any management plan;
- iv) Science and traditional knowledge have complementary places in the field of resource management, particularly as the inclusion of traditional knowledge often generates greater acceptance of management measures;
- v) In any marketing project careful thought needs to be given to the implementation of marketing, including identification of key personnel for training, not just identification of markets;
- vi) New income generating activities are best initiated where there is prior evidence of success and should focus on activities where there is already some local knowledge and experience;
- vii) Project proponents should have a constant process of self-appraisal with the aim of optimising performance.

5.4.2 *The Mamirauá community forestry experience*

Community forestry was an integral part of the Mamirauá project. Forestry provides a crit-

ical revenue stream during the high-water period when there is no income from fishing or farming. However, up until the project forestry activities had not been carried out in a sustainable manner, and the majority of benefits were flowing to external traders rather than local people. Once the area became an SDR the need to regularise and introduce sustainable forest exploitation became paramount.

Although the need for community forest management was foreseen at project inception, activities were not actually initiated until 1998. This is primarily because of the lack of adequate legislation. The Mamirauá project had to therefore lobby for the development of necessary regulations before it could start community forestry activities, and these were eventually issued by IBAMA in 1998. Since this time there has been some highly innovative work carried out by the forestry team. Mamirauá pioneered sustainable community forest management in the várzea from which mainly useful lessons emerge for wider application in similar contexts in Brazil.

As part of the overall Mamirauá project lessons learnt process, Michiel Meijer, DFID Forestry expert, carried out a distinct piece of work specifically focused on pulling out lessons from the community based forestry work. The following is a summary of these lessons (see Annex II for a more detailed analysis):

i) Projects continue to play a critical role in policy influence and legislative change

The Mamirauá project demonstrated how important it is to have field level projects to gain the necessary credibility to feed into policy change and development. Through trying to implement community forestry, the project identified areas where existing forest policy and legislation were deficient and adaptation was required. It helped develop criteria and indicators for community forest management, which fed into legislative revision. Without this field experience, it is unlikely that necessary changes would have been recognised.

ii) Creating simple, but effective, legislation and procedures, is essential if illegal activity is to be discouraged

Community based sustainable forestry might appear attractive, but if the requirements stipulated by legislation incur significant costs for communities, illegal activities will remain attractive. The Mamirauá project experimented with ways of minimising these costs, both in terms of simplifying the legal and technical procedures. During implementation it also became quite clear that the criteria for sustainable forest management need to be modified depending on the ecosystem.

The development of sustainable forest management plans is costly, and the Mamirauá project helped offset the costs of doing these plans. In the absence of 'project resources' the community or the local government may find means to finance such plans, but it will not be easy. Furthermore, the government cannot respond to community demands fast enough, for instance permit applications can take 7 months to process, by which time it is too late to extract the timber as the waters have subsided. There is a real need to work towards developing sustainable forest management solutions that can be managed by communities with minimal government and external support – or to seek out effective partnerships.

iii) The establishment of legal producer associations is difficult, but it is important as it contributes to the breakdown of the traditional (highly inequitable) barter system

Where literacy levels are low, establishing fully functioning and independent producer associations is not easy as there is a lack of necessary skills, given that some of the procedures are rather complex. Furthermore, forest management plans require some technical know-how. The project provided considerable support in establishment of these institutions and establishment of forestry operations. With the communities in control, and their activities now made legal, they are no longer dependent on external traders, thus contributing to the breakdown of the traditional patron system, which was highly inequitable. This has enabled greater financial returns to be gained by the local communities. Establishing formally registered producer associations has also helped communities become

more aware of their rights and responsibilities, which has positive impacts also in areas beyond forest management.

iv) Where there are few valuable timber species left, efforts should be channeled into adding value to cheaper timber.

The majority of the most valuable timber species have been extracted from the MSDR area, and those species left are of low value. The project tried to identify various ways that the local communities could increase the profit on the low-value timber that was being felled. The project has experimented with sawing the logs into planks and transporting them to market. However this is not possible to carry out with the lighter timber species, and depends on the producer association having access to a chainsaw. If the necessary permit is not acquired in time, however, this adding value activity holds little meaning.

v) Information derived from good monitoring can help refine regulations

The Mamirauá project monitored the impacts of logging and management on biodiversity and livelihoods, as this was required for validation of the management plan. Such information will eventually be used to help establish more accurate norms regarding logging impacts and harvesting levels. There are often proposals to reduce harvesting levels, but if they come about, this is very likely to render forestry unprofitable. It is therefore important to have information, which can be used to lobby for more effective and appropriate legislation.

5.5 INTRODUCING ALTERNATIVE SUSTAINABLE LIVELIHOOD ALTERNATIVES

The Mamirauá project introduced a suite of alternative income generating activities based on sustainable use of the local resources. These activities were to provide alternative income sources for the local people, to offset any losses arising out of conservation, and cover the costs of surveillance as well as generating enhanced incentive for sustainable use. Ecotourism and handicrafts, as well as agricultural activities were amongst the alternative income generating activities.

5.5.1 Ecotourism

Mamirauá 's eco-tourism value is high. It contains a number of 'charismatic' species, and is relatively accessible compared to other 'wilder' parts of the Brazilian Amazon. The (core) area for eco-tourism was identified in the Management Plan. A floating lodge was constructed close to the core area and the seven communities of the Mamirauá Sector, which contains the core area and eco-tourism lodge, receive direct benefits from tourism revenue associated with the lodge – i.e. through employment and sale of handicrafts, and through a share of the profits. The eco-tourism initiative was always planned as a low volume – high value (i.e. small numbers of wealthy and discerning tourists) product, and the intention was always to share benefits with the local communities. There has been a regular stream of visitors, but in 2002 the lodge was still recouping costs of establishment, and was not yet running at a profit. However, there appears to be growing international interest in the area, and International Expeditions, the largest ecotourism US operator has now included Mamirauá in its catalogue. This should make a significant impact on visitor numbers.

The Mamirauá ecotourism venture is also considered one of the most successful community-based ecotourism initiatives in the Amazon – and has some of the most pristine biodiversity, as well as the added attraction of charismatic fauna, which is more likely to attract tourists. The Brazil Lonely Planet³² guide rates the lodge, and the surrounding area, as one of the best places to visit in Brazil, and applauds the community based ecotourism efforts.

i) Grant finance helps get a community based eco-tourism initiative going in a remote location

The costs of establishing high-quality tourist infrastructure in a very remote location are often so high as to dissuade private interests from investing. The costs of transporting ma-

32. See www.lonelyplanet.org

terials, acquiring skilled labour and training staff are much higher and there is a lower guarantee of return, especially when establishing a new product in a previously ‘undiscovered’ area. Mamirauá however recognised the tourist potential and embarked on this ambitious project with great enthusiasm. As the river environment presented various challenges for construction of a long lasting lodge, the Mamirauá team decided to adopt a ‘learning by doing’ approach to construction. Unfortunately, this did not appear to have been communicated to DFID, who felt that that construction took far longer and consumed more resources than was necessary and did not seem to understand the challenges of construction in the given environment. The Mamirauá team experimented with a new form of floating house construction that avoided using logs as floats, but used Styrofoam and concrete. However, it transpired that the latter technology was not cost-effective, and the remainder were constructed using logs. The project also employed labourers from the area, however, their skill level was low and so construction took much longer than expected. However, employing locals enabled them to benefit more and won greater local support for the project.

The end result is a very attractive and unique floating eco-tourist lodge. As in many other part of the world, given the high cost of construction, it is unlikely that such a project would be viable without some form of grant assistance, and often banks or private investors put such monies up front. It was therefore worthwhile and valid for DFID to invest in it – as a precursor to attracting private money.

ii) Even if the benefits arising from eco-tourism appear limited, their value can be high to the local community

The eco-tourism initiative does not yet generate sufficient income to deliver benefits to all the communities in the MSDR, and so employment opportunities and benefit sharing are open only to the seven communities living within the Mamirauá sector where it is located – which have benefited significantly from the development. The ecotourism initiative has also provided very valuable demonstration and educational value and has also begun to generate more national and international interest in the area.

Communities local to the lodge benefit as employees in the lodge and as guides – in total it employs about 30 people, 3 in middle management, with an externally recruited manager. This employment provides a very valuable source of income to the community – adding about 84% to household income, in some cases – and is seen by the community as a very positive development within the MSDR. Skills training of staff has inevitably presented challenges, but considerable progress has been made with local staff – demonstrating that it is possible to run a high class tourist initiative with local people.

Whilst it is still in its early days, the lodge and its operations provide a very valuable showcase for how to implement a community based ecotourism initiative in the Amazon regions. It will be interesting to see whether or not Mamirauá starts to turn in a profit in the next years, as this will deliver greater benefits to the communities.

5.6 PROJECT MANAGEMENT

i) Make sure that the terms and conditions of the ‘donor – partner’ relationship are fully understood by all throughout the project process

There were a number of administrative misunderstandings between the Mamirauá project and DFID during the latter stages of the project’s second phase. A lack of effective communication between DFID and the project, around the meaning of budget commitments and no-cost extensions caused these misunderstandings. The Mamirauá project had been granted a no-cost extension in the first phase, and assumed such an extension would also be granted in the second phase. However, the extension was refused and the outcome was unfortunate as it resulted in the project closing down in June 2002, with a large amount of money left unspent and with the Mamirauá team not fully prepared for such early and rapid closure.

DFID could have perhaps done more to re-iterate the terms and conditions of the deal, especially when there were management and personnel changes in DFID Brasilia, and within the project. Much communication in the latter stages was through written correspondence and seemed only to make matters worse. A face-to-face meeting with Mamirauá's senior management should have been held at an earlier stage and accurate minutes taken. There seems to have been an over-reliance on *ad hoc* and unrecorded discussions and meetings between DFID staff and the late Project Director.

There was also much confusion among Mamirauá staff over the role of London advisers, and their relationship with the project. DFID role's was to monitor and advise, and ensure that the project objectives were being met. But, towards the second half of Phase 2, the Mamirauá team felt that London advisers' inputs were becoming increasingly and unnecessarily invasive. Furthermore, the visible disagreements between London advisers during the Output-to-Purpose Review, and DFID's rather unprofessional approach to evaluation, resulted in DFID losing credibility among a large body of Mamirauá staff.

There was also inconsistency in the way the project was administered by DFID – particularly in accounts. Initially the project was praised for upholding one of the most efficient administrative systems, but when relations became more difficult, DFID began to severely criticise Mamirauá. For instance, original receipts for claims were sometimes requested by DFID, and at other times not. And when receipts were not submitted, the Mamirauá project received severe criticism. DFID should have clearly articulated the rules of administration at the outset, and adhered to these in a consistent manner throughout the project. DFID's inconsistency led to confusion and misunderstandings between DFID and the Mamirauá project.

ii) The institutional and financial sustainability of externally-funded projects has to be addressed from the earliest stages

The Mamirauá project was very well-funded over its ten-year duration, DFID's commitment was £4.4 million (Phase I £1,725,000, Phase II approx. £2,810,000), over and above other donor commitments.

Many of the 'recurrent' costs for management of the reserve were highly dependent on this funding (for instance, salaries for some extension staff, diesel for the surveillance boats, General Assembly meetings etc), and measures to wean MSDR off these funds were adopted far too late in the project. Indeed some were forced upon the project only when it was certain that there would be no further DFID funding. The creation of Mamirauá Sustainable Development Institute (IDSM) solved a part of the resourcing problem (particularly for staff costs) and helped guarantee institutional sustainability, as signing a management contract with Ministry of Science and Technology means that the Federal Government is now committed to supporting IDSM annually. Since 1995/6, the federal government's financial contribution to IDSM has also increased, for instance in 1996, CNPq was responsible for 40% of Mamirauá budget.

iii) Mistakes are inevitable in project implementation therefore defensive and critical responses are not constructive – it is far more important to learn from the lessons arising, and to move on

DFID believes that some aspects of the Mamirauá project were associated with a 'defensive' rather than a 'learning' culture, but this was most likely a response to the many repeated criticisms on social development emerging from DFID, many of which appeared to the Mamirauá team to be unfounded. Some feel that these criticisms were targeted more at DFID environment projects in general, rather than at Mamirauá, following higher level changes in policy in DFID (see 5.7 (iii)) after which environment projects were no longer fashionable in DFID. DFID should have been quicker to recognise that defensiveness is not uncommon in Brazil, and is sometimes a response to what Brazilians perceive to be superior attitudes held by some donors, despite 'partnership' rhetoric – and this is very much what happened between DFID and the Mamirauá team. Whilst Brazilian partners could have made more effort not to be defensive, DFID London should have been more sensi-

tive to Brazilian feelings and the historical and cultural context of external relations within Brazil.

DFID London was very open in raising concerns over the social development inputs. Following the departure of Deborah Lima, who initiated the social development work based on her PhD anthropological research in the area, DFID considered that 'on the ground' expertise was too thin given the project's ambitions. DFID London's overall concerns about social development were perhaps correct, given the enormous local challenges, but comments were not delivered by DFID in an appropriate fashion. Consequently the Brazilian response was defensive, from both DFID Brazil and the Mamirauá project team, which made DFID London more concerned and uneasy. This defensiveness was to cost the project dearly – whoever was 'wrong' or 'right' was probably immaterial – more should have been done by DFID Brazil to allay DFID London's concerns, as DFID London held significant powers over the project. To make matters worse environment was losing out, as the fight against poverty became DFID key goal, and environment was no longer seen as a valid fundable project activity for DFID.

There were also some tensions between the biologists and the social development specialists on the project – some in the Mamirauá project considered this a healthy dynamic, others were less supportive. The Community Participation officers did emphasize the need for the biological and social sides of the team to engage in a common discourse, and to inform communities of the role of their research, however, more effort should have also been placed at the higher level to build bridges between the two disciplines (this did eventually happen in the project's later stages, see 5.7(iv)). According to one of the first reports³³, the social development team recognised that their inputs were extremely valuable, and that they had to act independently from the biologists so as not to lose support for the project locally.

iv) A combination of hierarchical and participatory management works best

Management approaches remains generally quite hierarchical in Brazil, and so the Mamirauá project with its focus on interdisciplinary work and community-based approaches was attempting something quite new in the Brazilian context. Progress was not always as smooth as was initially expected. However, the late Director – a highly enthusiastic and confident individual – was a very strong and inspiring leader, who kept a close control on progress and managed to lead the project in the right direction, as not all project members were able to see the bigger picture in the same way.

The Director's great 'visionary' abilities meant that some of the more mundane project management duties were sometimes overlooked. It appears that there were periods of great creativity when some administrative issues suffered, and DFID chose to pick on these discrepancies when it started criticising Mamirauá's performance thus overlooking some of the project's great achievements. There was clearly a trade off within the project between intellectual innovation and management rigour. And disagreements did occasionally flare up between the biologists and the social development specialists around work priorities and activities, but given that Mamirauá was an early and honest attempt to integrate disciplines around common objectives, a certain level of disagreement should have been expected.

That said, perhaps more could have been done to address the project management issue particularly to allay DFID's fears, whether these were correct or not, as concern spread within DFID that Mamirauá's management style was top down, and that the project was led by biologists, with all decisions made by them. However, it appears that this was not the case – it is more likely that the late Director's visionary zeal was misinterpreted as a top down style as there is much evidence to show that project staff were content and acting independently with regard to their project activities. When Mamirauá realised DFID had concerns, the project should have been more transparent in documenting its management systems and communicating this to DFID so as to allay their fears. Some attempts were made to practise participatory budgeting, by one of the Tefé-based Project Managers, however this was perhaps not communicated to DFID.

33. Projeto Mamirauá Progress Report # 2 October 1992 – March 1993, and "Semester Report #4" (Relat Out93-Mar94).

DFID seemed to have relied on anecdotes around management performance during visits and reviews, which may not be representative of how project management was truly working. For instance, field staff may have commented that there were no resources coming from Belem so they would not be criticised by DFID for slow progress. DFID then criticised project management for delaying resources flows, who in turn denied this was the case. The situation was clearly more complicated than appeared on the surface – and DFID project reviews and evaluations should have taken greater care to cross-check information that was provided particularly by more junior staff.

v) A combination of financial and vocational incentives is necessary to attract high quality staff to work in difficult environments

The Mamirauá project has attracted some high calibre and committed individuals, who have stayed with the project for a number of years, despite the isolated and difficult working conditions. Mamirauá's management made a point of not paying staff more than average, as this was not sustainable. And indeed, many staff have stayed with Mamirauá because they wanted to work with an innovative and high-profile project irrespective of the salary. This strategy did not work so well at the more senior level and the project continually struggled to find more good senior staff. Insufficient staffing ended up being a source of constant debate between DFID and the project. DFID felt that the project was understaffed and this hampered progress, whereas Mamirauá argued that it wanted to employ only the best staff to ensure quality implementation. DFID also believed that a Tefé-based senior manager would improve relations between the project office in Belem, Tefé and the MSDR. Whilst two Tefé-based managers were taken on by the project, neither worked out, and when eventually alternative arrangements were put in place these seemed to function effectively.

5.7 DONOR ROLES AND RESPONSIBILITIES

i) Donor staff and consultants must be fully briefed on context so that it's influence on project progress can be more fully appreciated

When advisory support is 'remote' and when consultants have not had much experience in the region, it is especially important that they are fully briefed on the context within which they will be working. Throughout the Mamirauá project, particularly in Phase II, there was a tendency among the DFID external reviewers not to fully appreciate some of the challenges and difficulties faced by areas such as MSDR. The Mamirauá project and its team were often 'blamed' for the project's shortcomings with insufficient attention placed on the context within which the project was operating and its relative achievements. The project should have been judged on the basis of its starting point and what it had achieved in difficult circumstances, rather than some mythical ideal about what should have been achieved.

Mamirauá had to work with communities who had been highly patronized for centuries, against a backdrop of suspicion of outsiders and their motives, with staff who were only just beginning to orient themselves in participatory approaches. For instance, it took the project 5 years to get communities to accept the project³⁴. Ideally, there should have been more staff with contemporary social development expertise, but such people were not widely available, and when international participatory expertise was brought in, this created its own problem, and was soon rejected, as were other attempts to introduce external experience into the Project.

Credit should have been given by DFID where it was due, i.e. a laudable effort to instil new approaches to sustainable natural resource management under challenging conditions. Instead DFID continually criticized the biologists on the project for not implementing 'perfect' social development approaches.

There is a general feeling among the Mamirauá staff that the constraints, which they had openly discussed with DFID, were then reported within mission reports more as criticisms than as collaborative problem identification. As a result staff becomes more wary of DFID and less open to closer collaboration.

34. Lima, D (1996) Movimento Sócio-Ambiental: Significado para a Conservação da Biodiversidade. Seminário Internacional Presença Humana em Unidades de Conservação. Anais.

Box 2: Challenges of communicating between DFID London and Mamirauá

'The role adopted by ODA as a flexible and understanding donor was another essential factor in project success ... the Forestry Field Manager in Brasilia was understanding of the project's vision, quick to respond to project requests, flexible in his interpretation of budget heads, trusting of the project staff, and very supportive of their efforts ... his management style was open, listening and based on facilitating relationships and processes rather than imposing his particular will ... There was less shared understanding between project staff and ODA staff and advisers in London ... Project staff felt that concerns expressed in London were made without local understanding... London advisers were consistently searching for rigour and accountability ... and yet this was not always well received by the project staff because they felt that there was little understanding in London, of the difficulties the project faced, the realities of working in the remote Brazilian Amazon, of the real reserve management problems faced by the project team, and of the kinds of fundamental biological research needed to inform resource management planning decisions.

The points raised by the Brazilian staff are probably unjustified criticism where ODA tried to inject rigour and accountability into an uncertain situation ... however following the Appraisal visit in 1991 there were no project visits by an economic, social development, or fisheries adviser for the entire project, with only one visit by a Forestry Adviser. This was badly received by project staff ... given the criticisms of some aspects of the project, the lack of Advisers at the Mid-Term Review was surprising ... Such visits were necessary not so much to provide advice to the project, but to develop greater understanding of the project context and difficulties, and develop trusting relationships with project staff so that advice or criticism from London would be better received in an atmosphere of support and benefit to project interests. This was not the case with much external advice to the project.'

Source: Harrison, J. S. (1996) Brazil: Mamirauá Project Evaluation of Phase 1. Report to DFID.

ii) Extra effort is required to ensure that cultural differences – in management or communication – do not result in serious misunderstandings

Care should be taken with use of language in reviews – as similar words can be used, but interpreted very differently by the different cultures, and this can cause very unfortunate misunderstandings. Use of the word 'patron' to describe the Mamirauá project in the Output-Purpose-Review (OPR) report created great affront as the Mamirauá team believed this was exactly what the Project was trying not to do. It is understandable perhaps why the OPR team interpreted it this way, as the Project did create some dependencies, but the OPR should have never have used the term given the operational context. Interestingly, many members of the Mamirauá project team felt that DFID itself behaved as a 'patron' in the way the review was conducted, some staff felt the meetings were more like exams, and the visible disagreements between DFID staff during OPR affected the way the Mamirauá project team perceived DFID.

iii) Ongoing successful projects should be protected from upstream policy change and staff changes, and when change is necessary, it should be planned and managed with care and over time

There was a radical shift in DFID policy in 1997, following the publication of the White Paper on Poverty Elimination. Whilst DFID maintained a commitment to environmental issues, poverty reduction became DFID's core focus. Projects such as Mamirauá, whose primary goal was biodiversity conservation, albeit through participatory approaches, no longer sat comfortably within DFID's new policy regime. The transition period was not particularly well-managed by DFID. There could have been more consultation with the Brazilian Government over the rationale behind the changes and how this might affect existing and future projects.

There were many conceptual debates on poverty versus environment, especially with regard to Brazil, which had been categorised as a 'global environment' country by DFID

several years previously. The different sectors within DFID did not always agree on how to tackle projects that no longer fit DFID's new policy, and unfortunately for Mamirauá, many of these debates were exercised around the project. The project was considered by some advisers in DFID London as not sufficiently 'poverty-focussed'.

DFID London should have invested more in clarifying the implications of its change in policy for the Brazilian programme, and the Mamirauá project. For instance, the Brazilian team could have been more widely consulted and their views solicited on how it could be adapted to fit with DFID's new policy stance more effectively. Unfortunately DFID London became so frustrated with DFID Brazil's resistance to change, that Mamirauá became a target for attack. This meant that Mamirauá's wider poverty impact went unacknowledged – the Mamirauá project helped move Brazil towards pro-poor conservation by incorporating people and protected area concepts and community based forest management in Brazilian policy and legislation. DFID however judged the project on the basis of its field impact rather than its policy impact. DFID's conceptual disagreements did cause considerable confusion on the ground, as it appears that project staff were not fully informed of the implications of the upstream policy change. This confusion was particularly evident at the Phase 2 OPR where there was open disagreement between London advisers. DFID should have taken greater care to be more consistent in approach, as it reflected badly on DFID.

iv) The time frames/horizons of donors and development partners are often out of sync, especially where poor or marginalised communities are involved

DFID funded the Mamirauá project for ten years. Funding ended because the project no longer complied with DFID's changing priorities – the heightened focus on poverty reduction³⁵. Key to this argument was the significant amount of money already spent in the area – with the low population density in MS DR the cost per person for the project was relatively high. However, this argument is not complete. Mamirauá's impact reached far beyond the MS DR area. It demonstrated that people and protected areas were compatible. Mamirauá probably prevented further evictions from Brazil's protected areas, and the enormous poverty implications that such actions would have had. It has served as a 'model' for other such areas (e.g. Amanã) and new SDRs have been established across the country, all with positive impacts for the local people.

There are many administrative, political and performance issues constraining the extension of project time frames and it is not the purpose of this report to debate this further. However, the ending of DFID's involvement in the Mamirauá project was not well managed, and the responsibility for this lies with both DFID and the project team. More effective communication may have helped, fewer letters and more face-to-face contact should have occurred. DFID should have been much more sensitive to the project's 'sustainability' dilemmas, whereas the project should have been quicker to recognize and accept DFID's procedures and requirements.

There has been much recent debate about project time frames. Some donors are beginning to accept that long-term commitments are necessary if there is to be real impact. NORAD has supported the Luangwa Integrated Rural Development Project in Zambia, similar in approach to the Mamirauá project, for about 20 years, despite the many difficulties the project has faced. There is growing recognition that social and institutional development takes time, especially when a project has to confront entrenched political interests. Furthermore, time is interpreted differently by rural cultures as opposed to educated urban dwellers. Decisions can take weeks or months to make, mainly because where there are new issues and new ways of operating, the community needs time to absorb the change, and forcing change too quickly can result in it being rejected. However, rural communities time horizons clash with those of external agents and especially donors. Reporting on qualitative change is not easy. This constraint needs to be better recognized by the administrators within the donor agencies.

DFID could have benefited much more at a political level, from the Mamirauá project. The project was much applauded by the Brazilian authorities. However, this opportunity was not unfortunately recognised and seized by DFID.

35. Poverty and Globalisation White Paper, and Brazil country strategy.

6.0 CONCLUSIONS

The Mamirauá initiative has clearly been very influential in Brazil, particularly in demonstrating how to put pro-poor conservation into practice in high biodiversity areas. It demonstrated that people and protected area/conservation approaches were possible, and so helped change the policy and legislation framework in Brazil. This achievement should not be underestimated as prior to Mamirauá attitudes towards protected areas were very conservative. The project also provided a very useful learning experience around institutional organization, surveillance activities and sustainable use possibilities.

It also demonstrated to people living within the area that it is possible to prevent outsiders from usurping all their assets, and raised awareness of citizen rights in the area. Communities outside the core area, and in Amanã are now keen to initiate their own 'Mamirauá project'.

DFID's investment was high, and this raises questions over whether same levels of investment will be available for other high biodiversity value areas. If not, it is extremely important now to build on Mamirauá experience demonstrate it and disseminate it to other areas, and identify lower costs ways of establishing community based management. It is estimated that the Mamirauá initiative cost \$1.5/ha – this is high given enormous size of rest of Amazon and would be very costly for Brazil if the same amount spent throughout Amazon – even if such amounts are spent in some North American parks. One reason for the high costs is few precedents, and the importance of the Mamirauá initiative was its demonstration value. Furthermore, the transaction costs in establishing something new should not be underestimated, but when similar approaches are adopted elsewhere it is likely to be less costly, as for example happened in the neighbouring reserve of Amanã – people adopted sustainable use approaches without a 'project' because they had already seen and heard what could be done.

It may be worth conducting a review again shortly to see whether the models and experiments funded by DFID have actually replicated themselves, and been adopted on a wider basis, without significant additional resources.

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ANNEX 1

THE MAMIRAUÁ EXPERIENCE IN COMMUNITY BASED NATURAL RESOURCES MANAGEMENT THE FISHERIES SECTOR – LESSONS LEARNT

BRENDAN DALLEY
MAY 2002

ACKNOWLEDGEMENTS

The author would like to thank all those who gave willingly of their time to discuss the Mamirauá and pass on their frank opinions. Particular thanks are due to João Paulo Viana, José Maria Damasceno and Leandro Castello for their endless patience and willingness to answer streams of sometimes repetitive questions. Without their help this report would not have been possible

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EXECUTIVE SUMMARY

COMMUNITY BASED FISHERIES MANAGEMENT (CBFM)– BACKGROUND

1.1 to 1.4 – A brief history of the origins and basic system of CBFM in the Amazon region. It was initiated by the Catholic Church to resolve the problem of growing violence between communities and urban based commercial fishermen. The system, now used all along the Amazon, is based on the rotational system of lake management, using Preservation, Maintenance and Fishing lakes.

CBFM–CURRENT ACTORS

2.1 to 2.7 – A brief description of the seven NGOs and one fishermen’s organisation currently working in CBFM along the Amazon

MAMIRAUÁ–THE ORIGINS

3.1 to 3.3 – A short background on the Mamirauá Sustainable Development Reserve (MSDR)

CBFM IN THE MSDR

4.1 to 4.4 – The MSDR is divided into sectors in accordance with the practice established by the Catholic Church with the same rotational system of lake management. One sector, Jarauá, is more organised than the others. Fisheries staff have been active over the years raising awareness of rights and occasionally acting as mediators in conflicts

SURVEILLANCE

5.1 to 5.3 – Surveillance is a problem for the MSDR as it is for the rest of the Amazon. Lack of Government resources and the vastness of the area further complicate matters. The introduction of Voluntary Environmental Agents is an attempt to deal with the problem, but there remains the question of financing.

MSDR AND LOCAL CIVIL SOCIETY

6.1 to 6.3 – Relations between civil society and MSDR are for the most part good.

MSDR AND LOCAL FISHERMEN’S ORGANISATIONS

7.1 to 7.4 – The local fishermen’s organisations have a positive opinion of MSDR, identifying the main source of conflicts as the communities. MSDR acts often as intermediary.

MANAGEMENT OF PIRARUCU (ARAIPAIMA GIGAS)

8.1 to 8.7 – Research carried out by the MSDR proved that local fishermen’s ability to identify single fish could be used as an accurate form of stock assessment that could be used at community level. Communities have been trained in the system and now set their own quotas, which may or may not be agreed by IBAMA.

MARKETING THE PRODUCT

9.1 to 9.5 – Pirarucu is a premium fish with each fillet or side weighing around 10kg. Initially the fish was marketed locally, through a local cold store. IBAMA then imposed a condition that it had to be sold direct to the ultimate buyer, to prevent illegally caught fish being moved under the permit. Later buyers have included a fast food chain and a group of restaurants in Brasília.

SOCIAL, INSTITUTIONAL AND ECONOMIC EFFECTS OF THE PIRARUCU MANAGEMENT PROGRAMME

10.1 to 10.4 – The Jarauá sector has organised itself into a producers’ association with all members now holding government papers such as ID cards. Increased participation and inclusion of women are other benefits along with increased incomes.

POST PROJECT

11.1 to 11.6 – The communities benefiting from the project have now taken steps to organise themselves in such a way that they will be able to continue operating when financing is withdrawn. Further extension work is being carried out by the MSDI to assist other communities manage the sustainable exploitation of their Pirarucu stocks.

LESSONS LEARNT

12.1 to 12.10 – A series of questions are asked in order to evaluate the lessons learnt

12. 11 Lessons learnt are:

- xv) Using an established and familiar method of resource management ensures greater acceptance with consequent participation and thus greater chance of success and sustainability;
- xvi) Concentrating on a particular area to establish a successful model of resource management is more likely to stimulate replication through popular demand and is a more efficient way of using available resources;
- xvii) Well considered choice of the initial target community/sector is essential for the eventual success of any management plan;
- xviii) Science and traditional knowledge have complementary places in the field of resource management, particularly as the inclusion of traditional knowledge often generates greater acceptance of management measures;
- xix) In any marketing project careful thought needs to be given to the implementation of marketing, including identification of key personnel for training, not just identification of markets;
- xx) Income generation in one sector of community economy can have adverse effects in others, which, in the context of the flood plain environment, may not be beneficial to the sustainable development of livelihoods;
- xxi) Project proponents should have a constant process of self-appraisal with the aim of optimising performance;
- xxii) Donor approach should be more participatory particularly with regards to assisting projects with positive self-appraisal, which the donors themselves should also practice.

1. COMMUNITY BASED FISHERIES MANAGEMENT – BACKGROUND

1.1 Community based fisheries management (CBFM) on the Amazon flood plains (Várzeas) started essentially in the 1960s when the liberation movement of the Catholic Church formed the Movimento Educacional de Base (MEB)³⁶. The MEB began promoting the formation of communities amongst the rural populations of Amazonia, including the riverine populations of the Amazon Várzeas. This was the first form of organisation for the Várzea dwellers. Prior to that, settlement of the rural Várzeas had consisted mainly of individual houses with no recognised community infrastructure. As a result of the work of MEB the newly formed communities had statutes, an elected president, a committee and a developing sense of identity.

1.2. It was also during the 1960s that the Brazilian government introduced incentive schemes to develop the fresh water fisheries. These resulted in the introduction of diesel powered vessels and monofilament nets. Initially the major beneficiaries were the fleet operators, who started sending their vessels further afield, into areas of the Várzeas that had not previously experienced intensive fishing activity. This increase in fleet size, vessel efficiency and fishing pressure coincided with the collapse of the jute industry that had been the mainstay of the Várzea economy since the 1940s. Thus, the riverine population in rural areas of the Várzea, having lost their cash crop, jute, became more reliant on fishing. Naturally they resented the intrusion of the larger urban-based vessels, regarding them as a significant threat to their main source of food and income. However, there was no specific legislation establishing any rights for the riverine communities to the stocks within, what they regarded as, their lakes. Government policy was, and still is, that all inland waters, not entirely surrounded by a single property, are open access. The combination of these factors led to an increase in conflicts, which became more and more violent during the 1970s, leading to several fatalities in the 1980s, the Amazon's own fish wars.

1.3 Concerned at the deteriorating situation, the Catholic Church established the first systems of CBFM in the Tefé region, inspired by Brother Falco, a Dutch missionary. These took the form of Acordos de Pesca (Fishing Agreements). These were only “agreements” in the sense that they were agreed by the communities. The commercial fishing interests were not involved in the formulation process. Also, although called “Fishing Agreements”, they were in effect more broad reaching as they covered all the natural resources in their area. Initially the communities closed off the lakes in their respective areas, prohibiting all commercial exploitation (fishing, logging etc). Access for neighbouring communities was also blocked. The scheme worked successfully with a fairly rapid increase in the stock levels, surplus to the requirements of the communities, which led some communities to negotiate licence deals with commercial fishing interests. These deals allowed access to lakes with fees being paid in kind (food supplies, fuel etc). The system of Acordos de Pesca gradually spread down river. In Silves it was adopted as a municipal arrangement. The municipality passed by-laws to give legislative support to the agreements, but these were not supported by federal legislation.

1.4 The system introduced by Brother Falco consists of a rotational system of lake preservation. Lakes are divided into three different categories: Preservation Lakes, where no fishing is allowed; Maintenance Lakes where only subsistence fishing for food is permitted; and, Fishing Lakes where commercial fishing is allowed. Preservation lakes are usually left fallow for two or three years, which allows stock recovery. Amazonian fish stocks show a remarkable ability to recover and return to former levels, if left untouched for that period. This system is the basis of all CBFM along the Amazon Várzea, with variations introduced to suit the different topography further down river.

2. CBFM – CURRENT ACTORS

2.1 FASE – GURUPÁ, PARÁ – This NGO is working on the island of Gurupá at the entrance to the Amazon estuary. It has received financial support from one of the PPG7 programmes, PDA. Currently its activities are funded by the Dutch Inter-ecclesiastical Organization for Development and Cooperation, and by the PPG7 ProVárzea project,

which is funding a Promising Initiative to develop further systems of community based forestry and fisheries management. Its fishery activities are concentrated mainly on the local prawn fishery. Working with the association of community organisations, FASE is encouraging the use of selective traps to allow smaller prawns to escape, improved processing techniques and improved marketing capacity.

2.2 IARA–SANTARÉM, PARÁ–This NGO has been working since 1992 in the Santarém area to further the sustainable use of the Várzea natural resources. In the fisheries field, the focus of their work has been on strengthening community organisation, legalisation of fishing agreements, promoting participatory management, collection of fishery landings statistics and environmental education. In the early years they were funded by IBAMA, FUNBIO and the German Government through the GTZ. Currently they are receiving funds from the ProVárzea project for a Promising Initiative to improve community communications in the Várzea area. IARA continues to collect fishery landings statistics in the middle Amazon, also funded by the PPG7 ProVárzea project

2.3 IPAM–SANTARÉM PARÁ– This NGO was founded in 1995, and has been working in the Santarém area through the WWF/DFID joint funded Várzea project. Their fisheries activities, centred on the islands of Ituquí and São Miguel, have concentrated on community lake management, stock recovery and fishing agreements. They have also been working closely with the Z20 Fishermen’s Organisation to strengthen grass roots organisation for wider CBFM. IPAM is receiving funding from the PPG7 ProVárzea to develop an artisanal fisherfolk training centre.

2.4 Z20 FISHERMEN’S ORGANISATION–SANTARÉM PARÁ–The membership of this organisation comes predominantly from the neighbouring communities and the artisanal sector. Working closely with the two NGOs, Z20 has been actively promoting CBFM and grass roots fisheries organisation to strengthen the political voice of this sector. They are currently receiving financing from the PPG7 ProVárzea project to strengthen institutional capacity in the Santarém region.

2.5 GRANA V –PARINTINS, AMAZONAS–This is a grass roots NGO whose members all come from surrounding communities. Working on a voluntary basis, they are promoting CBFM in the Parintins area, organising communities and assisting with lake protection. They have never had the benefit of outside funding. Currently they are working with the PPG7 ProVárzea project on a pilot system for monitoring and control of natural resource use in the Parintins area.

2.5 ASPAC–SILVES, AMAZONAS–This is another grass roots organisation, formed by community members in the Silves area. The group organises CBFM in the communities, and carries out voluntary surveillance work on the protected lakes. They are currently receiving financing from the PPG7 ProVárzea project for community based lake management, conservation and restoration of degraded lake side areas.

2.6 GPD–TEFÉ, AMAZONAS–This is a community based NGO which is closely linked to the Catholic Church and its social movements the MEB and the CPT . The GPD was founded in 1992 and represents the interests of 21 communities (3,000 people) in the regions of Tefé, Alvarães and Marãa. They are currently receiving financial support from the PPG7 ProVárzea project for CBFM and lakeside regeneration.

2.7 MAMIRAUÁ–TEFÉ, AMAZONAS–The Mamirauá Project, now the Mamirauá Sustainable Development Institute (MSDI) has been working actively in the field of CBFM, and its activities are described more fully below. The Institute is also receiving funding from the PPG7 ProVárzea project to support the collection of fisheries landings statistics in the Tefé, Alvarães and Fonte Boa regions

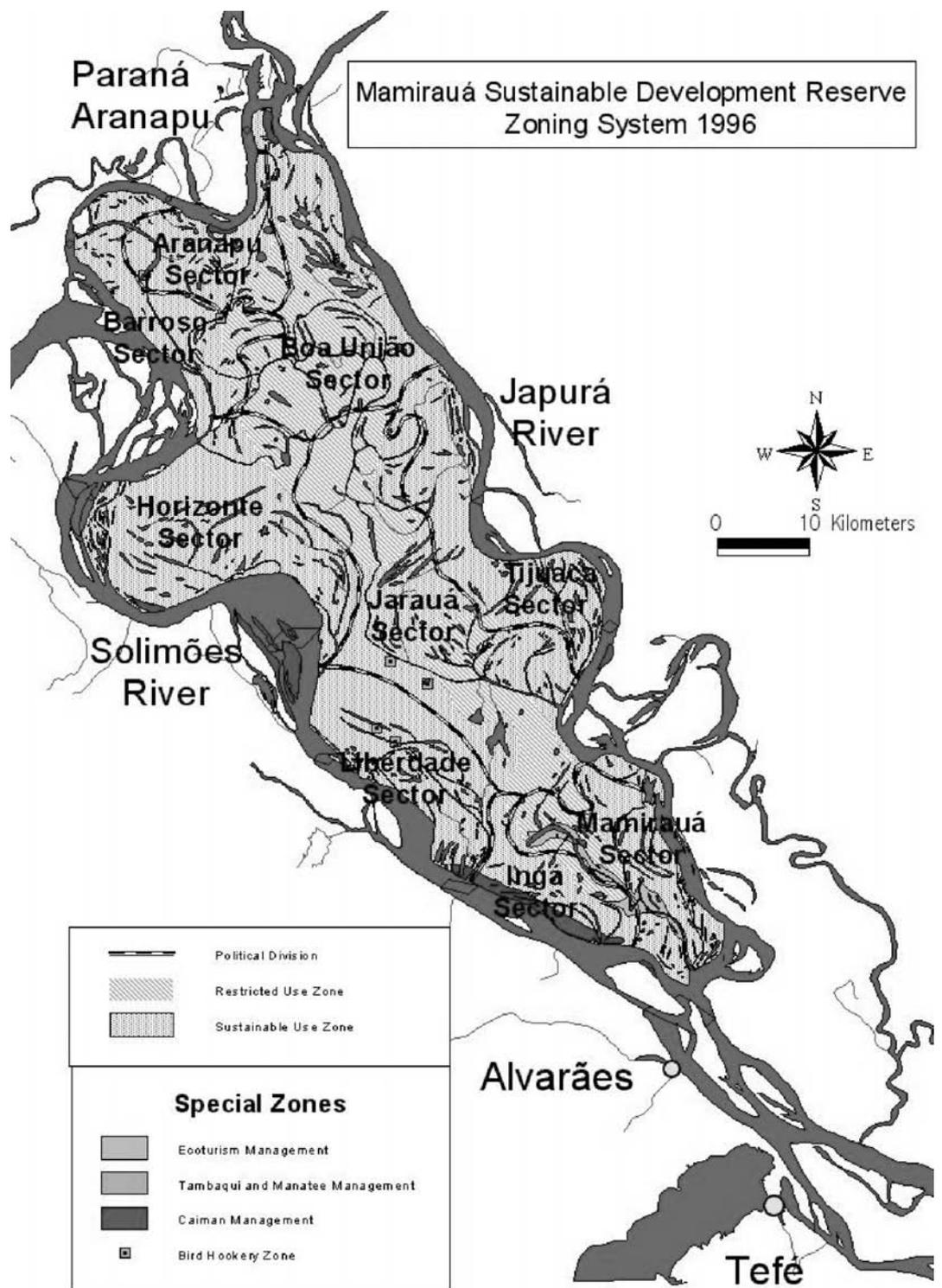


Figure 1 (by kind permission JP Viana)

3. MAMIRAUÁ – THE ORIGINS

3.1 The Mamirauá Sustainable Development Reserve (MSDR), situated in North Western Brazil (see cover and Fig 1), was created in 1996 by the Amazonas State Legislature with the objectives of sustainable use of natural resources by the communities living within and alongside the reserve, conservation of biodiversity, and research on sustainable resource management. The site had been an ecological station for the preceding six years. The principle behind the formation of the MSDR was that traditional knowledge is valuable, but insufficient to provide adequate data for natural resource management decisions. These require the input of scientific research. Therefore the Reserve aims to provide relevant scientific research data for the sustainable management of the natural resources. Tra-

ditional knowledge is not ignored, it is used, as in the case of the Pirarucu (*Arapaima gigas*), which is described below in section 8.

3.2 The area is flood plain or Várzea, composed of rivers, creeks, lakes and forest, where the aquatic and terrestrial resources are inextricably linked. The main biomass is fish, many of which depend for food on the forests, which in turn depend on the fish for seed dispersal. As such fish play a crucial role in the Várzea ecosystem, being often described as its thermometer. If the fish population shows signs of being unhealthy then the ecosystem is likely to be suffering.

3.3 Given its pivotal role in the Várzea it is not surprising that the management of the fisheries resources is an important part of the Mamirauá programme, with an emphasis on community based fisheries management, as practised in various parts of the Amazon.

4. CBFM IN THE MAMIRAUÁ RESERVE

4.1 CBFM in a wider context involves not only stock regulation but also social development and organisation of the fisherfolk. The Reserve is involved in all these aspects.

4.2 The MSDR was divided into sectors (*see fig. 1* above), each sector having a coordinator who organises meeting on a regular basis to discuss management issues. The lake rotation method of CBFM, described above, was also adopted. As both the zoning system and the rotation of lakes had already been used by the Catholic Church during their grass roots work in the same region, they were familiar to all the communities there, thus more acceptable. The communities involved decide themselves how the lakes are to be designated, and when they are to be rotated. In addition to the regulation of lakes, the closed seasons and minimum sizes declared by IBAMA are observed by the communities. MSDR fisheries staff ensure that all relevant information is made available to the communities.

4.3 The most organised systems of CBFM are in the Jarauá sector (*v. fig. 1*) of the focal area, which will be described more fully in the section on Pirarucu fishing. In the North of the focal area, the communities of the Aranapu sector (*v. fig. 1*) still have links with powerful patrons from Fonte Boa mostly, who barter goods for their fish, keeping the communities in a form of debt slavery. No real progress in CBFM can be made until the stranglehold of these Patrons is broken, by introducing alternative forms of financing.

4.4 The MSDR fisheries staff have been active in recent years raising the awareness of the communities to their rights, in particular with regard to benefits derived from membership of the Tefé Fishermen's Association (Colônia), such as unemployment benefit during the closed season and pensions. Due to the encouragement of the MSDR fisheries staff 120 community fishermen are now members of the Colônia.

4.4 MSDR staff see their role as mediators and facilitators in the CBFM process. Conflicts within and between communities still arise and probably always will continue to do so, given the nature of the society. Mostly they are resolved within the community in one way or another. However, occasionally the MSDR staff can help to mediate, but always make it clear that ultimately it is the community's responsibility to resolve such matters.

5. SURVEILLANCE

5.1 An essential part of any management programme is a surveillance system. However, due to financial and logistical considerations it is often not possible to mount as efficient a system as may be required. The Amazon Várzea is no exception to this rule. The Federal government have responsibility for surveillance, but lack funds, manpower and equipment to cover the vast areas of the Várzea. The IBAMA office in Tefé has responsibility for the area from Tefé to the Peruvian/Columbian border, and all the area North and South of this line to the State borders. It is 500 miles as the crow flies from Tefé to the border, so an idea can be gauged of the vast area IBAMA Tefé is responsible for. With few staff, little equipment and a less than meagre budget, IBAMA cannot carry out any effective surveillance, a normal situation in most fisheries.

5.2 Thus Voluntary Environmental Agents (VEAs) were introduced. These are riverine dwellers from the communities who carry out surveillance on a voluntary basis. They receive training and accreditation from IBAMA. VEAs are used all along the Várzea of the Amazon. MSDR has adopted this system, but has been providing fuel, and a daily rate for them, contrary to normal practice. The payment of VEAs does not have the approval of the Civil Society institutions working in the Amazon, because they fear that the scheme will fail as agents demand payment and many communities may not initially be willing to pay. However, for a surveillance system to be sustainable in the Amazon, the communities should take responsibility for guarding what they see as their resource. Relying on donors or Government is not sustainable.

5.3 One sector of the MSDR, Jarauá, has accepted this responsibility. Following the end of the DFID funded Fish Marketing and Pirarucu Management Projects, the community has taken full responsibility for the VEA operations in their area, financing it from the fish sales revenue. Further details are to be found in section 8 below.

6. MSDR AND LOCAL CIVIL SOCIETY

6.1 Two closely linked civil society groups are working in the Tefé area, the Group for Preservation and Development (GPD) and the Pastoral Land Commission (CPT). The CPT is a Catholic Church movement, which works all over Amazônia, and has been closely linked with CBFM throughout the region. The GPD is a community based NGO, working with communities around the MSDR area.

6.2 Discussions were held with both these organisations to assess their opinions of the MSDR. The general consensus was that the MSDR has been, and remains, a positive step forward in the conservation of the natural resources. Many of the criticisms of MSDR circulating in the Amazon region were discussed with them. They felt that most of them were unfounded, bearing no relation to reality, but rather being the result of local gossip or inter-institutional rivalry.

6.3 Relationships with MSDR had been generally good over the years, with cooperation and consultation at middle and senior management levels. Where conflicts exist they were confident that these could be resolved through a consultation process. Overall the level of logistical and technical cooperation given by the MSDR to the CPT and GPD has been commendable, and much appreciated by them.

7. MSDR AND THE FISHERMEN'S ORGANISATIONS

7.1 Discussions were held with the President of the Tefé Colônia regarding relationships between the Colônia and MSDR. He had taken office in 1999 and found a debt-burdened organisation of 315 members, most of whom were not paying their dues. Currently the Colônia has 1,200 members, all paid up to date. The majority of the Tefé Colônia members operated on small to medium size vessels, but 120 MSDR community dwellers are members, and more are expected to join.

7.2 The President felt that relations with the MSDR staff were generally good, although the formation of the reserve had severely reduced fishing areas available to his members. The problems experienced by the Colônia were with the communities themselves. MSDR staff act as intermediaries where required to assist the negotiation process over access rights.

7.3 Access agreements had been negotiated with communities in the MSDR. However, the complaint of the President was that if the communities denounced an illegal act on the part of the Colônia fishermen, they expected disciplinary action to be taken against them. On the other hand, if the Colônia denounced a community fisherman for an infringement, the community broke off the agreement. This is a fairly typical of the kind of conflicts that arise, with both sides blaming the other. The truth is usually somewhere in between the two polarised versions. The President was confident that acceptable access agreements for Colônia fishermen could be negotiated in the future with the MSDR residents.

7.4 The members of the Alvarães Colônia are all canoe fishermen. The meeting with the President revealed that he approved of the MSDR aims to conserve the natural resources. He complained about the behaviour of the MSDR VEAs, claiming that many were over-aggressive in their attitude. This is a common complaint by fishermen about VEAs. However, when one particular case was investigated it appeared that the fault did not lie with the VEA. Nevertheless the President was considering calling a meeting with the VEAs to discuss the problem, and find a longer lasting solution.

8. MANAGEMENT OF PIRARUCU (A. GIGAS)

8.1 Following a suggestion by Peter Bayley in his earlier work in the Amazon, the MSDR fisheries division decided to adapt the local knowledge of the more expert Pirarucu fishermen to manage the species. The Pirarucu needs to come to the surface to breathe air at regular intervals. The more observant fishermen had noted that each fish has an individual way of doing this. Four things are observed: the way the fish breaks the surface; the noise it makes on surfacing; the colour and shape of its fins; and the pattern left on the water after it sounds. By remembering these the fisherman, after observing several surfacings seem to be able to identify individual fish, and also tell what sex and what size they are.

8.2 Research carried out by Leandro Castello used expert Pirarucu fishermen for trial population counts in one lake, separating them into mature (over 1.5 metres) and immature (under 1.5 metres). The results of the counts were verified by a tagging and recapture programme.

8.3 The results of this research were put to practical use in October 1999 when a count was made of the Pirarucu population in the Jarauá sector to establish the permissible take-off for the second year of the marketing project. The quota for each year has to be set early in the year to allow sufficient time for issue of the necessary permits by IBAMA. The 1999 quota had been set at 120 fish or approximately 5 tonnes based on a formula used in the Peruvian Várzea (Bayley et al. 1992). The count later that year verified these numbers.

8.4 A simplified course in stock management was given to the Sector Association so they could understand the benefits of not over-fishing. The lessons of this course, although contrary to popular belief along the Amazon, were quickly grasped by the members. Many fishermen have been heard to say that the fishing of larger specimens should be prohibited, because they are the brood stock. They believe only the smaller size ranges of species should be caught. This commonly held belief that ignores the recruitment factor, is an example of how sometimes native knowledge is erroneous.

8.5 Once the meeting had grasped the basics of stock management they were shown the results of the Pirarucu count, divided into two sizes, those below breeding size and those above. They then chose the quota for the year, based on a conservative estimate of 30% of available adults, which in the early stages of the management programme the members felt was reasonable and productive, as can be seen in Table 1. They have slightly increased it for the coming year. The quotas set by the Association are not necessarily accepted by IBAMA as can be seen in 2001.

Table 1: Results of Pirarucu counts in 80 lakes in the Jarauá area and the quotas set by the Association, with the quotas set by IBAMA and numbers actually caught (where different) (Source J.P. Viana).				
Size Range	1999	2000	2001	2002
1 – 1.5 metres	2149	2984	5901	
>1.5 metres	358	994	1441	
Total	2507	3978	7342	
Quota	120	120 <i>fished 140</i>	300 IBAMA set 200 Actual catch 188	300

8.6. In the initial stages attendance at Association meetings was not good, so the members proposed that anybody not attending the meetings and partaking in the management process would not be allocated a quota. Attendance figures have risen sharply since.

8.7 It was observed that by allocating numbers of fish rather than weight, the fishermen targeted the larger specimens for greater return. This, in turn, removes pressure on immature stock, ensuring compliance with IBAMA's regulations and MSDR's Management Plan. Prior to the introduction of this management regime, alarming numbers of juveniles had been caught. Figure 2 shows the improvement in the length frequency distribution over the last three years.

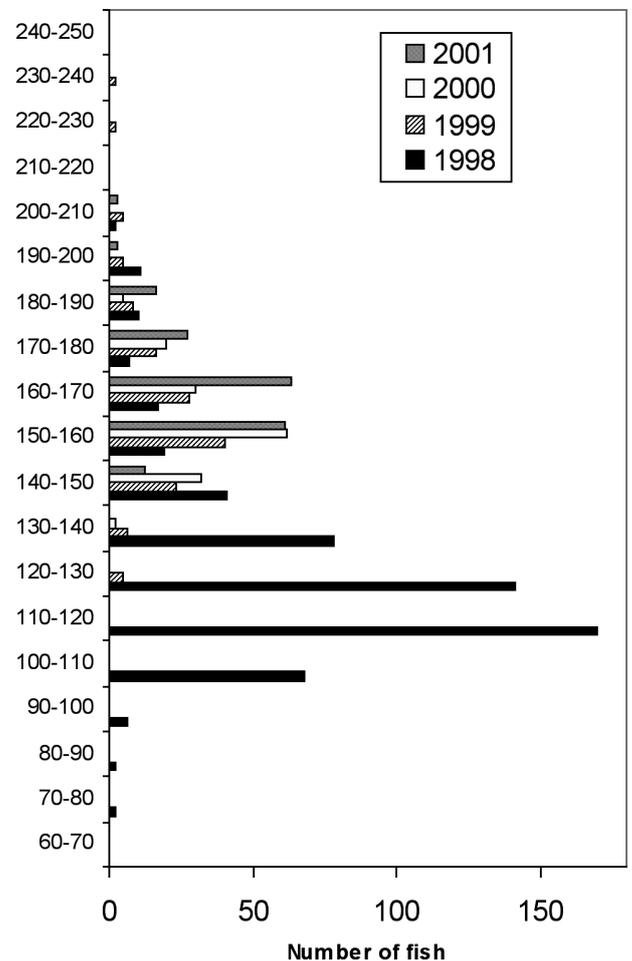
9. MARKETING THE PRODUCT

9.1 Pirarucu is a premium quality fish. When filleted an adult fish yields two sides, each weighing an average of 10 kilos. The flesh is firm and tasty. As with most fish, the price received by the fisherman is far below that paid by the consumer. The problem for the project was then how to achieve the best return for the fishermen, one that would cover production and transportation costs and still return a reasonable profit to the producer.

9.2 Sales in the first year were made to a processing plant in Tefé, which agreed to pay the same price as Manaus (R\$3/kg). A small quantity was sold to a fast food chain in Manaus at a better price (R\$4/kg). The following year IBAMA imposed a condition that the fish had to be sold to the final user, and not through a processing plant, because of the possibility of illegally caught fish being moved on the back of the managed fish.

9.3 The following year the Manaus fast food chain bought the whole quota at R\$6 per kilo. In 2001 a chain of restaurants in Brasília bought the whole quota for the premium price of R\$8 per kilo. The same buyer wants to increase the purchase this year, but the price may be lower.

Figure 2: Length Frequency distribution for Pirarucu during the fishing months of September to December 1998, 1999, 2000 and 2001
(Source J.P.Viana)



9.4 The enormous amount of work involved in all the market research and price negotiations was undertaken by João Paulo Viana, head of the MSDR fisheries team, as it is currently impossible for a riverine dweller to assume this task, given the lack of communications in the Várzea. The various regulations governing the transport of goods, particularly food, within the country, are other difficulties to be faced by anyone wishing to sell a product further afield than the traditional river buyers. Currently, the project's experience in obtaining all the necessary permits makes further shipments that little bit easier.

9.5 All other fish like Tambaqui (*Colossoma macropopum*) and other, less valuable species are sold in Tefé.

10. SOCIAL, INSTITUTIONAL AND ECONOMIC EFFECTS OF THE PIRARUCU MANGEMENT PROGRAMME

10.1 In preparation for this project the Jarauá sector decided to form a legally registered producers' association to include not just those who fished, but also those who did not, but were involved in other productive activities (agriculture, handicrafts etc). It should be remembered that the majority of the Várzea inhabitants are involved in a variety of activities throughout the year, according to the season.

10.2 The formation of a producers' association had various benefits, not least being the inclusion of women. The participation of women will strengthen the organisation greatly, particularly on the financial/accounting side. Other benefits were that all members have obtained government papers such as identity cards and CPF (an official register without which no financial transaction can be effected in Brazil).

10.3 The sector wished to include all in the benefits of the programme, so even some non-fishermen get a quota of the Pirarucu catch. This they ask a family member or friend who is a fisherman, to catch for them, paying the fisherman a side of fish as a fee.

10.4 The above decisions all arose out of proposals put forward by the members without prompting from the MSDI team, and are designed to maximise the benefits of the resource for all concerned. Table 2 below shows an increase in income for the fisherman over the three years of the project. In Table 3 a socio-economic survey showed a rise in household incomes. The methodologies used in that survey cannot separate different sources of income.

September to October			
	1999	2000	2001
Number of participating fishermen	42	46	67
Number of species exploited	7	13	12
Total production (t)	6,2	9,9	15,0
Pirarucu production (t)	3,0	3,5	5,3
Average sales price for Pirarucu (R\$/kg)	3,85	6,00	7,96
Gross revenue (R\$)	16.903,44	29.208,77	56.687,35
Average earning per fisherman for the three months in R\$	402,46	634,97	846,08

Table 3: Average income for families surveyed in the São Raimundo do Jarauá community by the socio-economic monitoring system (Source: Edila Moura).

	1994/95 (n=16 families)	1998/99 (n=20 families)	2000 (n=19 families)
Average annual income(R\$)	1.939,05	2.720,60	4.141,98
Basic shopping basket value (R\$)	43,68	44,14	46,98
Purchasing power (no. of shopping baskets per year)	44	61	88

11. POST PROJECT

11.1 One of the problems that face most projects is how to ensure continuity following the end of the project. This problem has been addressed by the fisheries team and the communities of the Jarauá sector. The fisheries division explained to the communities that funding for the fisheries marketing project was coming to an end, and that it would be the responsibility of the communities themselves to operate in an independent manner. The boat and related equipment were renovated and will be passed to the communities to operate at their own expense.

11.2 The communities in the Jarauá sector held various meetings to work out their strategy for operating the fishery, including how to operate the boat, maintain the Pirarucu stock management process, and ensure the VEAs continued to carry out surveillance. They have formulated the following plan that provides for continuing management and sustainable exploitation of Pirarucu in their lakes:

- in anticipation of having to operate the scheme without outside financial assistance four members of the community were trained as crew (skipper x2, motorman x2) by the Navy, and the community is identifying further volunteers;
- the crew will be paid from the proceeds of the operations;
- the producers' association have opened a bank account to be used for all financial transactions arising;
- those fishermen who count Pirarucu will be allocated an extra fish each from the quota; each member of the producers' association pays the following levies to the operating fund:
 - 13kg of Pirarucu;
 - 10 kg of Tambaqui; – *to be approved*
 - 10 kg of large catfish; – *to be approved*
 - R\$2.00 per month. – *to be approved*
- other normal Várzea activities such as logging, agriculture and the production of manioc flour (farinha) will continue outside of the fishing season which is short.

11.3 The MSDI fisheries division will continue to give assistance in the marketing of the product, looking for new markets, and assisting with advice to the community when required.

11.4 Prior to, and during, implementation of the fish marketing and Pirarucu management projects, the fisheries division devoted an enormous amount of work to training in correct handling techniques to provide a suitable product for marketing. José Maria Damasceno is responsible for this programme, which continues, but targeting other communities. One interesting feature of the programme is community mapping of lakes in their areas as an aid to management. The communities have communal map making sessions, finally producing their own map of their respective area. This participatory system gives an even greater feeling of ownership of the resource, and consequently responsibility to the communities. José Maria is also working on the problem of improving fish handling in other sectors/communities in preparation for their wish to manage and market their fish.

11.5 The management model developed in Jarauá has already been initiated in another sector, Tijuaca. The residents of Tijuaca live outside the MSDR, but are users of the resources within the Reserve. Jarauá has ceded some of the lakes in their sector to Tijuaca to increase their potential catch. Tijuaca benefited from the marketing project including their fish with that of Jarauá.

11.6 A request was received from the Coraci sector in Amanã Reserve, bordering the MSDR, for a visit to explain the Pirarucu management system and how that sector could benefit from marketing the product. Following the explanation of fisheries management by the MSDI fisheries team the participants were asked to calculate their quota base on a Pirarucu count they had completed. The MSDI team also made it clear that no external financing would be available, but that the micro credit scheme operated by MSDI was one possible source of financing. The President of the Jarauá producers' association explained how his association had adjusted to the new reality of life, post project funding. He stressed the importance of being independent in order to achieve sustainability. Members of the Coraci sector remained enthusiastic and have committed themselves to managing and marketing their Pirarucu along with other species. This sector has the advantage that it is relatively well organised, with a higher percentage than normal of the members possessing government papers. This will make the formation of a producers' association one step easier.

12 LESSONS LEARNT

12.1 The evaluation of lessons learnt from the fisheries sector of the "Mamirauá experience" has examined it in the context of the Amazon Várzea as a whole and its potential for replication in other areas of the world, in particular, flood plains. It has also examined the "experience" in the light of donor participation. This summary of lessons learnt is restricted to the fisheries sector, although some of the factors have to be seen in the wider context. However, these will be dealt with in the main body of the report. Various questions were asked in order to arrive at lessons learnt.

12.2 *"Has the Mamirauá concept of a sustainable reserve been an effective management tool?"* The conclusion reached is that, in essence, it has, insofar as the basis has been laid for a replicable management system to be expanded throughout the reserve. Contrary to popular myth the MSDR has not been a dictatorial, "Up-down" approach to natural resource management. It has been participatory, and it is perhaps naïve to imagine that it could have made any progress had it been dictatorial and non-participatory. The approach adopted by the fisheries team is no different from that used by other initiatives in the Amazon such as IARA and IPAM in Santarém. Initially there is a certain amount of stimulation from the outside to start the process and get the communities thinking for themselves. This approach is not "Up-down", but rather a sideways "helping push". It should be remembered that riverine communities have for many years been "protected" from independent thought by the patronage system that existed, and still exists. Therefore they do not readily adapt to thinking and planning for themselves. It should also be noted that the communities in all the other areas above (section 2), where CBFM is being practised, are still reliant on NGO presence, even after 9 years of activity. The "Reserve" concept has an important role in the overall management of Amazon natural resources, but as a part of a wider scheme incorporating other sustainable management options. The idea of the whole of the Amazon as a vast reserve ignores the reality of feeding the urban centres.

12.3 *"Has the approach by the MSDI fisheries team been too selective in restricting activities initially to one sector, thus limiting the potential benefits?"* The conclusion reached is that the approach adopted was the logical one. They chose a community that was relatively well organised, and well situated. What has resulted is a successful model that can be replicated, assuming the willingness of the sectors to achieve their goals. One factor in support of the potential for replication, is the demand from other communities for the model to be introduced. If the fisheries team had decided to expand their activities over a wider area initially, their efforts would have been diluted and ineffective, given there were only four members in the team.

12.4 “*Has the MSDI been too exclusive in its relations with civil society and the fishermen’s organisations?*” The conclusion based on opinions expressed by both these sectors, is that the MSDI fisheries division has cooperated with both civil society and the fishermen’s organisations, acting as a mediator in conflicts and giving technical assistance where required.

12.5 “*Is native knowledge, such as is used in the Pirarucu management, applicable to fisheries management?*” The conclusion is that it has a place in fisheries management. The Pirarucu counting is only effective because of the fish’s need to breathe air and its essentially sedentary nature, which enables individual fish to be counted, making population estimation incredibly accurate. With other fish in the region such as Tambaqui (*C. macropopum*) fishermen can identify approximate numbers, but not individuals. Research is currently being conducted into this species in the MSDR, but as it is migratory it is unlikely that such accurate estimates will be achieved. Science and the fishermen are constantly at odds. Initially the MSDI approach was that local knowledge is unreliable in natural resource management and that scientific research is the only reliable tool. This could possibly be true for terrestrial and amphibious resources, but fish population dynamics is a notoriously unreliable science. In the same way “local knowledge” can be somewhat fanciful. Two examples of locally held beliefs in the Amazon illustrate this. One is that the consumption of peixe liso (non-scaly fish) gives the consumer leprosy. The other is that moonlight makes the fish catch spoil quicker (many fishermen cover their catch at full moon to prevent the moon rays falling on it). Neither of these beliefs has any basis in science. However, it is argued that there is merit in a holistic approach using a combination of science and traditional beliefs, which is the one adopted by the MSDI fisheries division.

12.6 “*Has the fish marketing project been planned and executed efficiently to bring sustainable benefits to the community sector involved?*” The conclusion reached is that overall it has. The community has prepared itself to take over the project, and taken the necessary steps to ensure sustainability. While there is still potential for failure, it is felt that all possible steps have been taken to ensure sustainable production. Where the main weakness lies is in the marketing, which has been recognised by the fisheries team from the beginning. There is no easy solution to this, given the distances involved and the difficulty in communications. One possible answer for the future is to have a broker in Tefé, but it is likely that a good deal of mistrust would have to be overcome before the communities accepted that person. Marketing and record keeping are areas that will keep the MSDI fisheries division occupied in the foreseeable future.

12.7 “*What overall benefits have accrued to the community sector from the project?*” The overall benefits have been a strengthening of community organisation, greater participation of women and increased incomes.

12.8 “*What have been the adverse effects, both real and potential, of the project?*” The most immediate adverse effect was that with increased income the community placed less importance on the production of manioc flour and other Várzea activities. While fishing is the predominant economic activity in the Várzea, other activities play an important role in community life, as a result of the annual flood cycle. However, this was realised by the communities involved and activities are now planned to use the seasons to best advantage for an improved return. One potential adverse effect could be protests from other community sectors that one, Jarauá, was favoured by receiving the boat and equipment. This has not arisen as yet, but Jarauá could defuse this by offering the services of the boat to assist other sectors.

12.9 “*Was MSDR responsive to Donor demands for improvements in performance, particularly with regards to M&E?*” The MSDR fisheries team recognise that initially they did not respond as rapidly as they could have to donor demands for improvements. However, they feel that attention was given to these demands and a process of self analysis was initiated.

12.10 “*Has DFID’s approach been participatory?*” The conclusion reached is that DFID’s overall approach, particularly to monitoring and evaluation by London based staff, seems

to have given the feeling that it could have been more participatory. The impression gleaned from interviews and reading reports is that there appears to be a certain lack of open-mindedness, with an over-reliance on preconceptions. DFID's approach in this respect, as perceived by the recipients, seems not to have changed much over the years.

12.11 The following are the lessons learnt:

- xxiii) Using an established and familiar method of resource management ensures greater acceptance with consequent participation and thus greater chance of success and sustainability;
- xxiv) Concentrating on a particular area to establish a successful model of resource management is more likely to stimulate replication through popular demand and is a more efficient way of using available resources;
- xxv) Well considered choice of the initial target community/sector is essential for the eventual success of any management plan;
- xxvi) Science and traditional knowledge have complementary places in the field of resource management, particularly as the inclusion of traditional knowledge often generates greater acceptance of management measures;
- xxvii) In any marketing project careful thought needs to be given to the implementation of marketing, including identification of key personnel for training, not just
- xxviii) identification of markets;
- xxix) Income generation in one sector of community economy can have adverse effects in others, which, in the context of the flood plain environment, may not be beneficial to the sustainable development of livelihoods;
- xxx) Project proponents should have a constant process of self-appraisal with the aim of optimising performance;
- xxxi) Donor approach should be more participatory particularly with regards to assisting projects with positive self-appraisal, which the donors themselves should also practice.

ITINERARY

- 14 May 2002 Manaus – Tefé
- 14 May 2002 Meeting with GPD a local NGO in Tefé
- 15 May 2002 Meeting with João Paulo Viana and José Maria Damasceno – MS DR Fisheries Division
- 16 May 2002 Meeting with of Tefé Colônia de Pescadores
- 16 May 2002 Boat to Alvarães
- 16 May 2002 Meeting with of Alvarães Colônia de Pescadores
- 16 May 2002 Return to Tefé
- 16 May 2002 Meeting with IBAMA staff
- 17 May 2002 Boat to Jarauá
- 17 May 2002 Meeting with Jarauá Producers' Association
- 18 May 2002 Boat to Tijuaca
- 18 May 2002 Meeting with Tijuaca Producers' Association
- 18 May 2002 Boat to Jarauá
- 18 May 2002 Meeting with Sr. Antonio Martin President Jarauá Producers' Association
- 19 May 2002 Boat to Coraci
- 19 May 2002 Meeting with Coraci Sector Community Representatives
- 19 May 2002 Boat to Jarauá and Tefé
- 20 May 2002 Meeting with CPT/MEB representatives
- 20 May 2002 Round up meeting with João Paulo Viana
- 20 May 2002 Tefé – Manaus
- 21 May 2002 Meeting with CPT regional representative
- 21 May 2002 Manaus – Brasilia
- 22 May 2002 Round up meeting with lead consultants
- 23 May 2002 Briefing ABC and DFID in country office
- 24 May 2002 Report writing
- 24 May 2002 Brasilia – Manaus

ANNEX TWO

MAMIRAUÁ COMMUNITY FORESTRY

BY MICHIEL MEIJER, FORESTER, DFID SENIOR ENVIRONMENTAL ADVISOR

1.0 INTRODUCTION

This report focuses on the community forestry management component of the Mamirauá project. The focal point of this study is the lessons learned from community involvement and participation in forest management, its financial and ecological sustainability, and policy implications. Since the time available for this consultancy was short this could not be an in-depth study of the technical details of the forest management.

2.0 COMMUNITY FOREST MANAGEMENT

Community forestry was an integral part of the Mamirauá project as its Sustainable Development Reserve status allowed communities to optimise the sustainable use of key resources they have at their disposal. In an area dominated by water and forest it became quite obvious that apart from fisheries, for which the project has probably become most well known, forestry also plays an important role. This is because forestry is an activity that produces its major revenues during the flooding season, when fisheries revenues are at their lowest, thus providing a crucial additional source of livelihood for the communities. Another important argument for inclusion of forest management in the project was that forests in the area have always been exploited but once area became an SDR the need to regularise and ensure forest exploitation is sustainable has arose. Forest management is also important as it encourages the retention of forest cover, the key to ensuring biodiversity conservation, in the face of pressure for clearance for agriculture and ranching.

Although the need for community forest management was foreseen at project inception, activities were not actually initiated until 1998. One of the key constraining factors in the initial stages was the lack of adequate legislation permitting community forest management. Through the “Movement of Amazonian Community Forestry Projects”, in which the Mamirauá project participated the authorities were put under pressure in order to establish rules for community forest management. Due to this pressure eventually, in 1998, a presidential decree was issued, allowing for sustainable community forest management, and subsequently IBAMA issued normative instructions on the exact requirements for community forest management plans.

It is currently permitted to extract up to five trees per hectare, with a maximum volume limit of 20 m³ of timber per hectare. The management cycle is 25 years, which results in a production volume of less than 1 m³ per hectare per year. This is within what is normally considered as an acceptable harvest level for natural tropical forest. The minimum diameter for exploitation is 45 cm at breast height. Other criteria include minimum amounts of individuals of each species that are to be left in the area, including seed trees, to guarantee the survival of the species. These norms are subject to change, and up to today it is still not clear what might happen in the near future. Discussion has been ongoing in IBAMA on whether or not to reduce the maximum allowed volume from 20 to 10 m³ per hectare. Such a change would obviously have negative consequences in terms of economic sustainability of the enterprise and profits, resulting in a subsequent reduction in interest in legal sustainable forest management.

The other key reason for the late initiation of forest management activities was the lack of skilled manpower, a situation that was improved through the provision of a DFID Technical Cooperation Officer, and the subsequent hiring and training of forest technicians.

When discussing forest management with project staff, the communities identified five species that, due to their relatively high commercial value, had been overexploited and were becoming rare in the reserve. The General Assembly decided to impose a logging

ban in the reserve on these five species (among which *Ceiba pentandra* and *Cedrela odorata*). This is now an additional criterion for the forest management plans.

Trees are felled during, or at the end of the dry season, when the forest is dry and working conditions are better. When the waters rise, the forest becomes flooded, thus enabling loggers to remove and transport the timber by floating it out of the forest. For the heavier timber species, lighter trees are also felled and lashed to the heavy timber to keep it afloat.

Before felling, lianas are cut to reduce felling damage, and the community members have received training in directional felling in order to reduce the physical impacts of logging.

In order to add value to the relatively low value timber that predominates in the area some communities have opted to saw logs into boards on the harvest site. Although losses due to low levels of technology (only chainsaws are used) are considerable, the increase of over 300% in value not only should make it worthwhile, but it might even turn out to be essential for the forest management to continue to be a profitable activity in the future, for at least heavier timber (light timber sold for plywood manufacture can't be sawn). A full economic analysis of this kind of further processing, and its implications for community participants' time, is necessary to determine whether this is an appropriate strategy.

3.0 LOGGING IMPACTS

The present harvest levels are within what is being considered acceptable for sustainable forest management in terms of annual increment. This is even more valid because the várzea areas, where the management is done are more fertile than average due to the seasonal floods that deposit new nutrients on the soil every flooding season. For this reason productivity of várzea forest is most likely to be higher than average, which would lead to relatively lower impacts of sustainable forestry. This, in combination with restrictions on harvesting commercially valuable, but rare, species, and the compulsory retention of at least 10% of exploited species as seed trees, means that the biodiversity impact of exploitation is likely to be minimal.

Other physical impacts are also small, due to the implementation of directional felling, the cutting of lianas, and the limited number of trees harvested per hectare. Roads and skid-trails that are necessary in 'terra firma' or mainland forests for the extraction of the logs are not required as in the várzea logs are floated out. Only a few narrow trails are lightly cleared to enable the flotation of logs lashed together, thus the transport impact is near to zero.

In addition, the impacts of logging are being carefully monitored after a block is exploited, which is a requirement of the State Government environment institute – IPAAM (*Instituto para a Preservação Ambiental do Amazonas*), and this should provide data on which to base improved forest management in the future.

4.0 ORGANISATION

Due to legal requirements set by the management plans, logging permits and tax collection systems, community forest management can only be done through formally registered associations. Whilst a form of social organisation has existed for a long time in the reserve, instigated by the Catholic Church, this was informal until the Mamirauá project assisted communities in formalising these organisations. The Community Forestry Programme built on the institutional development work carried out by the Mamirauá project – and some communities have established forest producer associations as a result, forest management has also become an activity covered by other associations.

The Mamirauá project provided the communities with technical support for the elaboration of forest management and annual harvest plans. For a management plan to be legally approved by IBAMA a 100% inventory of the commercial trees in the area to be exploited, and annual harvest plan in which individuals to be cut are identified, are required.

This involves a lot of work, and cannot be avoided with current legislation. The use of GPS, which would reduce the amount of work, is not feasible due to the multi-layered, dense canopy that blocks the signal. It is also technically complicated for uneducated communities, especially as screens are still generally in English). The project has provided ample technical training and assistance to community members in this work. However, low levels of literacy among community members has hampered the fieldwork related to the elaboration of the plans, for which much data needs to be written down in a systematic way. Nevertheless, through gradually diminishing support, practice on the part of community members and adult education, this problem should diminish over time.

A simplified system exists for community forest management plans, however the simplifications in this are more related to the bureaucratic and legal aspects rather than to the technical part. However, the project has spent considerable time and effort in devising, experimenting with community participation and developing practical and as simple technical guidelines and data collection forms for community use. The Community Forestry Programme has also been exemplary in documenting all the steps and procedures necessary to undertake legal and technically appropriate forest management in the MS DR – an extremely important resource for replicating the experience both within the MS DR in new communities, and also in the future outside the reserve.

In terms of organisation, the communities themselves establish the internal rules concerning division of labour, provision of inputs and distribution of the revenues. For instance, in the Nova Betel community, the owner of the chain saw would get a larger share of the revenues than those who do not have any equipment. Labour input is another important criterion for distribution of the revenues. The project provided some suggestions as to the options open to communities for labour and revenue sharing rules, and insight into the experiences from the models adopted by other communities. It also helped with the formalisation (i.e. legal registering) of the associations. Ensuring that the rules were established by the communities themselves was important as it made it more likely that people will stick to them, than externally driven requirements.

The establishment of formal producer associations has not only enabled communities to engage in legal forest management, but has also helped communities to gain a stronger marketing position – by legalising community timber production and marketing. No longer are the communities dependent on the middlemen, who previously exchanged illegal timber for food and other basic necessities at very high rates of exchange – in strong favour of the middlemen. Becoming a formally registered producer association has forced communities to manage their administration and production process more effectively, and through doing so they have become more aware of their rights and responsibilities, which has positive impacts also in areas other than forest management. Communities now use written contracts for the sale of timber, instead of verbal deals that were frequently not upheld by buyers. Through this they have achieved a more powerful negotiating position, and one that now allows them to get a better deal, thus bringing about greater economic and social independence.

5.0 LIVELIHOOD ASPECTS

The *várzea* forests within the Mamirauá Sustainable Development Reserve have been exploited for timber for quite some time, both by the local communities and by outsiders. Establishment of SDR status has excluded outsiders and granted full resource rights to the local communities, thus increasing their incentives for better stewardship of the resource. For the local population timber is a natural resource of key importance that provides a valuable source of income, either in cash or in merchandise, during the flood season, when fishing activity is greatly reduced, when agriculture is impossible, and when cassava flour stocks are running low. The only other viable economic alternative during the flood season would be hunting, but which is illegal, or seasonal migration. Production of *açaí* (a very popular and nutritive fruit of the Amazon region, highly valued by the population) also reaches its peak in the flood season, but not being undertaken in the reserve on a commercial scale it hardly competes with timber extraction for the available labour. It would also be less compatible from the biodiversity conservation perspective, as it would require considerable ecosystem simplification. At the same time, if crops should fail, timber ex-

traction may be used as a coping mechanism. The incentive for communities to be involved in forest management lies in the fact that sustainably produced timber, with all due authorisations by IBAMA has a higher market value than illegal timber and doesn't carry the risk of being confiscated by IBAMA. At the same time it enables the communities to escape from the traditional barter system, which has been extremely abusive. Hopefully, in the long term they will also appreciate that careful forest management is a sustainable activity that does not compromise future production for them and their offspring.

The fact that individuals do not legally own any land in the reserve calls for the need of communities to secure their right of access to the resources. Formalising access to and use of these resources is one way of securing benefits arising, which is another reason why communities are interested in the forest management activities. In the MS DR, communities negotiate between themselves and formalise their traditional areas of forestry activity. Decisions made are then approved and legally formalised through the General Assembly. This high level of community involvement, and granting of rights to locals over outsiders has also encouraged locals to engaged in law enforcement activities. The project provided boats and fuel, but the community members themselves do the surveillance. In serious cases they can call for assistance of IBAMA by radio. Illegal activities, especially by outsiders, have been significantly reduced as a result of this, maximising the benefits to communities from the sound management of their resources.

According to the local population and project documentation, the volume of (illegal) timber extraction in the reserve has fallen over the last few years. Reasons for this include more intensive surveillance on illegal logging, small economic returns and other employment opportunities that have surged with the implementation of the Mamirauá project. (Gillingham, 2001). Today practically all the logging is done legally and such forms of timber production are likely to increase.

6.0 GENDER

Forest exploitation is physically very demanding work, and therefore not very suitable for women, who tend to have less physical strength or interest. The field visit and a review of the project literature has revealed very little gender relevant information, and as a consequence not much can be concluded on this. For future research it would be highly interesting to obtain data on what the influence of men working in forestry would be on the situation of women in the communities. Another issue that would be interesting to evaluate would be potential contributions of women to sustainable forest management, especially in data recording where there are few literate men available in the community.

7.0 BOTTLENECKS

Whereas the project provides very positive and innovative experiences through the actual implementation of community forestry, a number of unresolved problems remain.

7.1 COMMUNITY PARTICIPATION AND OWNERSHIP

An organisational system that facilitates community participation is now in place with the MS DR focal area. However, forest management activities have depended on the active participation of a limited number of individuals, and also on continued assistance by the project. If timber revenues grow as a result of increased harvests and added value to the timber, and people get more used to the idea of forest management, there will be more incentive for people to get more actively involved. The community members consulted during the field visit felt very positive about the forest management inputs because they helped reduce their dependence on middlemen, improved their understanding of legal forest management and ultimately improved revenues, and thus livelihoods.

7.2 COMMUNITY OPERATIONAL CAPACITY

The level of technological inputs in forest management activities is very small: only chain-

saws and small canoes are used for harvesting, and only simple compasses, tape measures and tags are necessary for the required inventory work. Although the transport of the timber is facilitated by the waterways, these same waterways can complicate the access to the areas. Rivers and creeks are often full of floating grasses and other vegetation, which seriously reduces navigability, even using small boats and canoes. As a result the harvest levels are even lower than those stipulated by the management plan.

An additional complicating factor is that harvesting and transportation depend on the flooding level, which is hard to predict. Only the timber in areas that are actually flooded can be transported. As a consequence, when floods are lower than average production will go down. The timber in non-flooded areas has to remain there until there is a flood high enough to reach them.

To compensate for these unavoidable natural problems, the project encouraged communities to prepare a number of different forest blocks at different heights so at least the lower ones can be harvested in the case of low floods, and also to undertake as much inventory fieldwork when access is easy. They are also encouraged to only fell trees of light timber species just before the floods, to avoid felled timber being left to rot in the forest. For heavy timber this is less of a problem as it can be sawn on site and transported manually to where the water has reached.

7.3 ECONOMIC SUSTAINABILITY

As the most valuable timber species are hard to find at present and have been banned from exploitation, only commercially less interesting species are available for current exploitation. Maximum prices do not exceed R\$ 40,00 per cubic metre, with average prices being considerably lower. Annual allowable cut depends on the total area of productive forest available to each community and is calculated by dividing this area by the rotation length – in this case 25 years. As communities have considerably different areas for forest management, the maximum allowable cut is also widely different, varying from 20ha/yr in the smallest communities to well over 100ha in others. If the harvested volume is estimated at 20m³/ha/yr and average price/m³ is estimated at R\$20 – revenues could theoretically vary from R\$8,000 for a small community up to R\$48,000 for a large community that exploits its full allowable harvest on 120 ha. However, actual production depends on many other factors such as species composition and abundance, the area actually included in the management plan, and the number of trees planned for felling that are actually felled in a given year. Trees that are not felled in a given year may be felled the next year thus complicating the economic analysis as some costs will be borne in a year when the revenues were not forthcoming, and vice-versa.

Although not a good example of the general economic situation of community forest management in the MSDR as harvests were well below those planned and most timber was sawn rather than sold as logs as is still the case for the majority of communities, the Nova Betel community was said to have a net profit of about R\$ 3,000.00 last year. A full economic analysis of experience to date in all participating communities in order to demonstrate would enable a more accurate determination of the economic feasibility of community forest management.

In calculating the costs for the example of Nova Betel above, the elaboration of the forest management plan and the annual operation plans have not been included, since these costs were borne by the project. And the cost of these activities is considerable, especially if the labour costs of technicians are included. If these costs were internalised this would affect profitability. However, as it is legally necessary for a registered forest engineer to write a management plan, there is no way around this at present. However, the project had been seeking to minimise these costs as much as possible through the automation of computerised calculations for inventory data and the use of templates for management and harvest plans. A competent forest engineer with an appropriate system should be able to produce a management plan in 2 hours once all the data is entered. A large saving in this respect could perhaps be made in the long run if time-consuming data entry by the project was eliminated and undertaken by community members themselves, perhaps either

through the use of hand-held field data collectors or through the training of community members in data entry at project headquarters in Tefé.

Including labour costs can also influence the outcome of economic analysis considerably, and its inclusion or exclusion needs to be considered carefully.

The project is seeking to improve the returns by experimenting with different methods of adding value to the timber, e.g. by sawing boards before marketing, which increases the price in some cases up to R\$ 150.00 per m³. However, due to the rudimentary technology level (only a chainsaw is used for this) the amount of timber that is lost during the process is considerable. Increasing technology levels in order to make community forest management in the reserve more profitable, however, might not be the most appropriate way to solve this problem, because this would increase overhead costs and would make the system more vulnerable.

Currently technical requirements for the management and harvest plans are stringent, but if these were simplified costs would decrease. The information obtained through the monitoring activities should be one of the means to enable this. In a pilot activity like this the initial costs always tend to be higher due to lack of information, however using the information gained through experience it should be possible to reduce future costs.

IBAMA is supposed to provide assistance with the management, however it is hampered from doing so by its very low capacity. It would be worthwhile to start investigating other ways of elaborating these plans in a more cost-effective manner. Examples in the Amazon region exist where the buyers take care of the elaboration of the plans and their submission to IBAMA, and even the harvest, in exchange of a considerable discount on the timber price (Ian Thompson, pers. com.). Economically this might very well be interesting for the communities, but there are also serious drawbacks to this approach. It seriously reduces (or practically eliminates) the sense of ownership of the community, in which lies a considerable part of their motivation to get involved in sustainable forest management in the first place. Where communities without formal land title feel the need to confirm their right to the use of the forest this would probably not be acceptable to them. Nevertheless, this kind of experience is interesting from the point of view that parts of it could be replicated, especially in the sense of looking for partnerships with the private sector.

7.4 IBAMA PROCEDURES

IBAMA procedures create serious bottlenecks. IBAMA in Tefé is seriously under resourced, with only one speed boat, an annual budget of only R\$ 4000,00 and a staff of five to cover an area many times larger than the MSDR. Thus, they are not able to adequately fulfil their duties. All procedures related to the approval of management plans, annual operation (or harvest) plans and timber transport permits have to be sent to IBAMA in Manaus, which causes serious delays. In a management system where everything depends on seasonality, such delays seriously hamper management effectiveness and profitability. For instance, if a transport licence is issued after the flood season, the timber has to remain in the forest until the next flood season. Likewise with the annual operation plans which have to be issued before the flood season so that the trees can be felled before the floods. The project did pressurise IBAMA to consider sending copies of approved management plans to Tefé so that local IBAMA staff have the necessary information at their disposal for monitoring community forestry activities, and perhaps also to be able to issue transport licenses in a more timely fashion.

7.5 LEGISLATION AND REGULATION

This Mamirauá project demonstrated that legislation is not always synchronised with ideological and technological progress in wider society. Apart from the lack of technical know-how, the activities planned by the project were difficult to implement because legislation enabling community forest management was not in place, until several years after the project started.

The regulations that are in place today are identical for all kinds of ecosystems in the region. Normally one would expect legislation to allow for differing local circumstances, not only between ecosystems but also according to specific characteristics of different areas within the same ecosystem. Of particular importance in the MSDR was the inadequacy of the current legislation, which did not recognise the enormous differences between the *várzea* and ‘terra firme’ forests. Essential criteria for considering the significant differences between forest types would include numbers and size of specimens of a certain species (of which, in fact, the self established rule in the Reserve to ban five species from logging can be seen as an example). Probably even more important is the understanding of the ecology and growth rates of different species. For example, *mulateiro* is a light demanding species and would regenerate considerably better if a far larger proportion of trees was removed from the stand than is currently allowed under existing legislation. However, this kind of approach is complicated and only through long-term coordinated research efforts such as that being undertaken by DENDROGENE can suitable rules be devised.

Another problem is that under the current legislation flooded forest is considered a protected area and cannot be explored. The implication of this is that the economically most interesting areas cannot be explored. This legislation needs to be changed urgently.

8.0 POLICY IMPACTS

Both the innovations and bottlenecks experienced by the community forest management can be directly linked to policy issues, which demonstrate the extremely high relevance of field level project experience for policy development and adaptation.

The prime example of how Mamirauá has influenced policy has been in the definition of a whole new category of conservation units, the Sustainable Development Reserves, which allows for conservation of natural resources and their sustainable use by the local population. The impact of creating the SDR category has been highly significant in Brazil: following Mamirauá several other Sustainable Development Reserves were established across the Amazon region, e.g. the Iratapuru Sustainable Development Reserve in the State of Amapá. What began as a new category of protected area on State level has now been adopted on Federal level.

The other area where the project has had influence on the policy level is that, together with similar community forest management projects in the region, it urged the federal government and IBAMA to establish adequate legislation and a set of criteria for community forest management.

Apart from stimulating policy change the project has also generated much valuable information that could be used to develop further new policies or adapt existing ones. For instance the ongoing monitoring and research on logging impacts in permanent plots is of extreme importance for policy and legislative development. The results of such research could eventually help to establish more diversified regulations that will consider differentiation between different ecosystems and establish specific regulations according to the productivity of each of them.

9.0 REPLICABILITY

The Mamirauá forest management experience was definitely a pioneer experience; it is among the first attempts to establish community forest management in Brazil and the most extensive and advanced, as well as being the only example within the flooded forest ecosystem. Given its pioneer nature, there has been a consistent lack of enabling policies, institutions and legislation, so the project has often had to wait and even argue for policies coming into place, as well as being the first to interpret and test them, and develop practical management systems to accommodate them. By triggering reform, it has facilitated a situation whereby other community forest management initiatives now have a ‘smoother ride’, as they will find many policies already in place and can learn from and adapt the management model and systems developed in the MSDR.

It will be hard to replicate any kind of pilot activity designed specifically to fit within a certain context to its full extent in other contexts. Local circumstances almost always vary; consequently it is usually necessary to adapt the experience. In practice, ‘ready-made recipes’ that could be applicable under all circumstances hardly ever exist. Nevertheless pilot experiences like this are of great value, because many of the lessons learnt will be of use to other projects. The way the experiences have been documented also enables others to select those systems and procedures developed in the MSDR as appropriate.

Also, the practical experience gained through implementing the forest management activities should prove valuable for other initiatives in flooded forests, but not necessarily for other ecosystems, where adaptation will be required, especially with regard to transport, which is likely to require much higher investment, and is also likely to lead to higher ecosystem impacts. Floating the timber out, as is done in Mamirauá, is extremely cheap, and thus impacts on the ecosystem are minimal. The Mamirauá experience could also serve as an example on how to organise and motivate communities in sustainable forest management, as well as encouraging them to demand their rights to manage their local forest resources. This is particularly important in other *várzea* areas where the state still retains legal control of the forest thus effectively excluding communities from engaging in community forestry with its vast potential for both livelihood improvement of the rural poor whilst conserving biodiversity.

The organisational aspects of the Mamirauá forestry experience may also serve as an example for communities dealing with the sustainable use other types of resources. Although in communities with markedly different resource tenure structures the Mamirauá example may turn out to be of less help. For instance where people have secure land tenure the motivation to secure rights to the use of a resource will not be as valid. On the other hand for privately owned forest land, sustainable forest management is definitely an incentive for farmers to respect the forest areas which are legally protected but where management is permitted, the so-called “legal reserves” – *reserva legal*.

A very clear lesson is that an increase in law enforcement activities serves to make both communities and traders move away from illegal timber extraction. Proof of this is the demand for, and increment in price paid for sustainably produced timber.

In general terms the experience is highly relevant to communities in RESEX areas. In the RESEX resource use is much more restricted, but sustainable forest management can be allowed. Similarly to the SDR, communities in a RESEX do not have individual ownership rights, which makes the situation much alike in terms of motivation to get involved in forest management as a means of confirming and securing user rights to the resource.

10.0 LESSONS LEARNED

10.1 POLICY AND LEGISLATION

The Mamirauá project demonstrated the importance of having field level projects to feed into policy development. Through the development of new activities in community forestry the project identified areas where policy and legislation were deficient and where its adaptation was necessary. The clearest example of this is the establishment of criteria for community forest management, which did not exist when the project needed to legalise community forest management activities.

It has also become clear that current regulations for community forest management make forestry quite a costly activity, which when extracting lower value timber, as is the case in the MSDR, has a significant negative impact on profitability. Diversifying regulations for community forest management according to the ecosystem, the local availability of timber, and its economic value would help improve profit margins. In the case of exploitation with very low impact, as in the MSDR, regulations could be more flexible and less demanding in order not to disincentivise communities to exploit the timber legally. Regulating the activity will always carry a certain cost. However if this cost becomes too high this forms in fact an incentive for illegal exploitation.

10.2 INSTITUTIONAL

The Mamirauá experience has shown that it is perfectly possible for non-governmental organisations, like the Instituto Mamirauá, to take responsibility for the sustainable use of natural resources in a protected area. The project has been able to provide law enforcement activities and plan sustainable management in the reserve, whereas it remains doubtful whether government agencies would have been able to, given the lack of resources and institutional capacity to do so.

10.3 PARTICIPATORY MANAGEMENT PLANNING

The Mamirauá experience has shown that communities are prepared to take up and implement sustainable management, and that this form of exploitation can benefit them economically. However, uptake of sustainable practices also depends on the different incentives between using the natural resources irregularly or legally. If legalised use of the resource becomes too complicated, due to complex, or costly, legal requirements, communities may very well lose interest in using their resources sustainably and legally. It has also become quite clear that a minimum of basic education and literacy is indispensable for good community resource management planning. In many areas this level of basic literacy does not exist.

10.4 ECONOMIC ACTIVITIES

Community forest management might be an interesting economic option, under the right conditions. However if requirements stipulated by legislation incur significant costs and efforts, illegal activities will remain attractive. The Mamirauá project shows clearly that mechanisms to minimise these costs, both in terms of simplifying the legal and technical procedures wherever possible, and of looking for innovative partnerships need to be established for people to gain a real and lasting interest in sustainable forest management.

10.5 MONITORING

Establishing a monitoring system is an important part of the management planning process, and is also required by the State Government. Monitoring the impacts of logging and management by the project and the participating communities have yielded information that is extremely important for the validation of the management plan. This information will also eventually help to establish more accurate norms regarding logging impacts and adequate harvest levels, which then can be included in the norms and laws for community forest management set by IBAMA.

10.6 PROJECT MANAGEMENT AND DONOR PARTNERSHIPS

One of the key reasons for the delay in undertaking community forestry activities in the MSDR was the lack of skilled and experienced manpower. Through the provision of technical assistance, as part of which a DFID Technical Cooperation Officer was attached to the project, this constraint was removed and rapidly the community forestry programme started to show more concrete results.

Due to the pioneering nature of the programme and the need for research, community awareness raising, community training and support, etc., flexible financial support from a donor was essential – DFID provided adequate funding in a suitably flexible manner. The forestry programme was the first programme within Mamirauá to seek other sources of funding for continuing its activities before DFID funding terminated. It was successful in acquiring funding from PROMANEJO. However, the inflexibility and bureaucratic complexities of this new funding is seen to be restricting the programme's ability to be flexible and adaptive to unexpected situations.

Generally DFID has been appreciated as an excellent partner for its practical approach, its flexibility, and its respect for its counterparts. Nevertheless moments have arisen of unnecessary misunderstandings. These misunderstandings demonstrated the importance of open

and regular communication between the donor and the project. Consultants and staff at the country office and in London should also learn to appreciate local circumstances more fully. On the other hand, all project staff should also be made fully aware of DFID policy and operational issues, and the impacts these may have on the project particularly on medium and longer term. Consistency in what is expected, and in what is agreed upon by both parties as stated in the project document is of the utmost importance for a smooth project implementation. Short term changes, particularly on strategic and policy levels tend to cause considerable unrest and if not handled well may lead to conflicts. Dialogue and mutual understanding are essential in coping with this, and the presence of a DFID Technical Co-operation Officer in the field can be of the highest importance in providing this.

CONCLUSION

Mamirauá is beyond doubt a pioneer experience, the first project to work on community forest management in the flooded forest of the Amazon region. So far, technical know-how and experience on community forest management are extremely limited in the region and the project is one of the main players involved in changing this situation. The Mamirauá experience is highly relevant since it combines improvement of rural livelihoods with biodiversity conservation through local stewardship of forest resources. Due to the presence of large areas of flooded forest and poor riverine populations in the region, there is an ample scope for replication, provided that usufruct rights to the forest are given to the communities. The SDR model has proven to be a good way of doing this.

DFID has played an important role in sustaining the project through its initial phases, and in providing technical know-how. Through its continuously updated working document the project has been very effective in documenting its experience, so that state-of-the-art information is available. This approach has also influenced how other elements of the Mamirauá project document their experiences.

Apart from the technical aspects the project has had significant impacts on policy. Not only was a new category of conservation unit established, but the project also indicated the need for community forest management legislation.

An important point of concern is the financial sustainability of the project activities. These still rely on donor funding, which is not a lasting solution. For essential project activities continuous funding needs to be guaranteed, whereas the economic viability of forest management will require more technological and organisational improvements, which could be complemented by policy changes that reduce costs.

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Biodiversity &
Livelihoods Group

International Institute
for Environment and
Development
3 Endsleigh Street
LONDON
WC1H 0DD
UK
Email:
biodiversity@iied.org

Mamirauá Sustainable Development Reserve, Brazil: Lessons Learnt in Integrating Conservation with Poverty Reduction

This paper aims to articulate the lessons learnt in generating sustainable livelihoods for poor and highly marginalised groups living within an area of high local and global biodiversity value. The area is Mamirauá Sustainable Development Reserve in Amazonas State, Brazil. Projects and activities in this reserve over the last ten years have delivered useful insights on how to tackle the challenge of balancing biodiversity conservation with poverty reduction. These focus particularly on: (i) how to change policy and legislative frameworks to provide a more enabling environment within which to achieve biodiversity conservation with poverty reduction; (ii) how to address the governance gaps, by engaging local institutional development and political organisation activities and trying to move beyond patronage politics; (iii) how to develop and implement the management systems and technologies that would encourage sustainable use of existing resources; and, (iv) how to introduce economic alternatives based on biodiversity conservation and its sustainable use.

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