

The Cornwall Rivers Project and Tamar 2000

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ABSTRACT:

In addition to the Cornwall Rivers Project, this Annexed contains further background information on the Tamar 2000 programmer, including its independent economic appraisal and a related Tamar 2000 wetland study. In this chapter discussed about the Cornwall rivers project and tamer 2000. The goal of the Tamar 2000 project was to enhance the ecosystem of the river Tamar by providing guidance to landowners and management. The initiative was backed by money from public funds the Environment Agency and MAFF, private funds, and the EU (EAGGF). By reducing agricultural inputs, diversifying farm enterprises, and promoting tourism, this advice aimed to improve river quality and ecosystem while simultaneously bolstering the rural economy.

KEYWORDS:

Bishop Fleming, Cornwall Rivers, Indirect Benefits, River Project, Tamer Project.

I. INTRODUCTION

In addition to the Cornwall Rivers Project, this Annexed contains further background information on the Tamar 2000 programmer, including its independent economic appraisal and a related Tamar 2000 wetland study. The goal of the Tamar 2000 project was to enhance the ecosystem of the river Tamar by providing guidance to landowners and management. The initiative was backed by money from public funds the Environment Agency and MAFF, private funds, and the EU (EAGGF). By reducing agricultural inputs, diversifying farm enterprises, and promoting tourism, this advice aimed to improve river quality and ecosystem while simultaneously bolstering the rural economy. Tamar 2000 was implemented by a team of consultants who focused on farming enterprises throughout the watershed and paid for the creation of 117 complete farm plans that sought to both improve the environment and the economy through suggested beneficial activities.

Reduced fertilizer use, composting of farm yard manure (FYM), under-sowing of maize, ditch clearing on a rotating basis saving digger days, water separation and water savings using roof water, separating dirty and clean, etc., and a change from annual to biannual hedge cutting were all suggested actions. Additionally, more conventional economic advice was given, such as diversifying the farm to provide tourist amenities. Along with these plans, consultants assisted farm managers in locating appropriate funding sources so they could put energy- and water-saving technologies, buffer zoning, and roof water separation into practice. The advice's main goals included reducing direct costs and increasing profits from farm diversification.

Tamar 2000 Economic Evaluation Study Summary

An economic assessment was conducted towards the end of the Tamar 2000 project cycle to assess the advantages and disadvantages of suggested activities. This assessment had two acknowledged flaws EU regulations only required economic evaluation jobs and regional economy, overlooking wider benefits and it had to be based on the assumption that the recommendations would be implemented because funding restrictions required completion before the project's end. Despite these limitations, the Tulsa study offers important proof of the potential effects of the Tamar 2000 initiative. 30 farms were chosen to be typical of the 117 farms in the catchment for whom a total farm plan had been completed and pertinent data had been acquired, and the Tulsa evaluation was based on advice and its acceptance on those farms. This systematic random process uses the criteria of Farm Size, Principal Enterprise, and Farm Advisor. The sample was selected based on the distribution of farms in the watershed, with 29% being small farms under 40 hectares, 35% being medium farms between 40 and 80 hectare, and the remaining 36% being large farms 80 hectares and more chosen for additional research. The average farm size in the basin ranged from 3.5 hectares to 214 hectares, a wide range [1], [2].

For the Principal Enterprise' category, farms in the seven primary categories of livestock, arable, equestrian, tourism smallholding, and various combinations of these categories were also chosen for research in representative proportions across the watershed. According to Turner et al., the application of project

recommendations resulted in both direct benefits, which primarily benefit participant farmers and correspond to direct use values, and indirect benefits, which benefit a larger group of stakeholders. Benefits were computed based on both actual and projected uptake. The range of direct and indirect benefits included renting out cottages with fishing holes or barns for residential use, as well as stall blocks and bed and breakfasts. The annualized values for each sample were used to compute all direct and indirect benefits. Shooting and fishing both played large roles in society, including the sale of fish and the angling-based exploitation of course and game fish populations. Operations including coppicing, thinning, and reducing erosion all had positive results. A variety of stakeholders, including farmers, travelers, and anglers, reaped indirect benefits to varying degrees and at various levels, including:

1. The local community level, from employment benefits to community commitment for improving environmental conditions.
2. The national level, like meeting national targets like the UK Biodiversity Action Plan targets.
3. The international level, like facilitating compliance with international agreements.

The evaluation of benefits, such as the protection or improvement of water quality as a result of the decrease in diffuse pollution, is a complicated subject. However, the numerous potential advantages come from the provision of drinking water, fishing, leisure pursuits, industry, agriculture, 'general environmental value,' industrial use, and property values. Tulsa used the annual decrease in water treatment expenses at the Gunn slake water treatment facility the Tamar River serves as the primary source of raw water for Plymouth and South Devon as a proxy for improved water quality or rising customer satisfaction. Nevertheless, as some prior case studies have demonstrated, the indirect value of improved water quality may be quite large. In order to match the relatively simple calculation of the costs of control measures in improvement schemes, Newsome and Stephen investigated methods for assessing the benefits attributed to improved surface water quality. The benefit of improved surface water quality in North Wales' River Gwen fro, a test catchment that is primarily rural as does the Tamar, was predicted to be between £6.5 million and £25 million. However, because it is derived from a variety of indicators that in fact represent numerous ecosystem services, this cannot be applied to the Tamar for the purposes of ecosystem service evaluation.

II. DISCUSSION

According to willingness to pay (WTP) methods, contingent valuation studies in catchments around the world have shown that household costs for improving water quality ranged from \$39.6 to \$130.6, \$196 annually, \$252, and even \$526. These values aim to convey aspects of recreational use and water quality, as well as existence value the sum of money one would pay to know that a specific environmental asset is conserved and bequest value the sum of money one would pay to preserve an environmental asset today so that future generations may enjoy it in the same condition. It may be assumed that, excluding the highest, which greatly deviates from the results of the other research, households would be ready to pay between \$39.6 and \$252.0 year to improve the quality of their water. This corresponds to an annual value between £742.50 and £4,725 for the 30 farms in the Tamar 2000 sample. The value of the water quality, extrapolated for the entire catchment, might range from £12,375 to £78,750. This is definitely an underestimate because thousands of other individuals, besides farmers and their families, are also concerned about the improvement of the water quality, including anglers, visitors, and Plymouth's water users.

It is challenging to assess nutrient and soil loss. The Tamar 2000 project recommended fencing off fragile riverbanks, restoring river corridors, replanting and providing livestock access to water sources, as well as river corridor woodland regeneration or replanting as methods of erosion prevention. Improved natural habitats especially for fish and less dredging in estuaries are just a couple of the advantages that can be anticipated from a reduction in soil loss to rivers. Tulsa cites research that indicates a net decrease in soil erosion of between 1168.5 and 3259.5 tons per year throughout the watershed, with values ranging from £2.19 per ton worth of productivity loss to £40 per ton transport cost of returning the material from the estuary to source). With a median price of £20 per hectare, this translates to a catchment total of between £23,370 and £47,190, of which 30.6% or 188 ha of the 615 ha of river corridor restored can be attributed to Phase II of the Tamar 2000 project. Overall, there were significant benefits, which were discovered to fall into three categories: agriculture and other savings tourism and barn renting fishing and shooting; and woodland management, wetland restoration, water quality, and parallel public funds. About 50% of the total benefits came from tourism.

If the stream of expenses and benefits during the planning period are discounted at 6%, then a farm company. The cost-effectiveness of advisors' time is demonstrated by comparing this benefit to the average cost to the West Country Rivers Trust of £2,200 for the delivery of a farm business plan including advisors' pay, expenses, and

overheads. The Tamar 2000 initiative restored 615 hectares of the river corridor and identified and controlled 67 places of accelerated erosion by actions agreed upon with farmers, according to extrapolations made from this focused subgroup study. It should be noted that as Tulsa was unable to assess all benefits, this will be an underestimate. Given that agriculture is more important to the South West than too many other parts of the UK, these returns to farm enterprises were significant.

According to a 1999 report titled Environmental Prospectus for South West England, produced by a coalition of organizations and released by the RSPB, farming accounts for 4% of the region's Gross Domestic Product (GDP) in the South West, compared to an average of 2% for the UK, and the environment supports 100,000 jobs and £1.6 billion, or more than 4% of employment, in the region. It's interesting to note that neither the type of farm nor the size of the farm significantly correlated with the amount of direct advantages that the farmer received.

A2.3 Tamar 2000 wetland research. A supplementary assessment on wetlands was created to complement the Tamar 2000 programmer. It examined the historical and current amount of wetlands in the watershed and the effects of their restoration (Hogan et al., 2000).

The fact that wetlands account for around 6% of the world's land area while producing about 15% of the ecosystem services and natural capital value underscores the fact that they are among the most significant environmental resources in the world. Wetlands, despite their continued lack of understanding and frequent abuse or neglect, may hold the key to restoring crucial ecosystem functions in catchment systems, including those that provide real benefits to society, such as fisheries, flood control, water quality protection, erosion control, and other functions with quantifiable economic value. According to a survey conducted by the Devon Wildlife Trust in 1992, 92% of the wetlands that existed in South West England in 1900 have been lost as a result of changing agricultural practices, which have had a severe impact on the wetlands of the Tamar system. The Tamar's wetlands were found to be a source of a variety of beneficial ecosystem services, including improved water quality with repercussions for fisheries and the overall health of the river corridor, a source of water for livestock, a decrease in the risk of flooding downstream, maintenance of river levels during dry seasons, support for summer grazing, benefits for wildlife conservation, including habitat for rare plants and animals, rough terrain for game shooting, and provision of food for wildlife [3], [4].

The value of the Cornwall Rivers Project

The Tamar 2000 study served as a springboard for the larger, EU-funded Cornwall Rivers Project, which expanded on the ideas discovered there. According to Bishop Fleming Chartered Accountants' evaluation report for the Cornwall Rivers Project, published in 2004, page 7, "The Cornwall Rivers Project is directed towards the rehabilitation of the key rivers and their catchments across the entire Cornwall Objective One area." The project's overarching goal is to empower and involve local communities in managing land use in a sustainable manner to safeguard and improve Cornwall's rivers. The project was established to extend the work done out by the Trust's Tamar 2000 SUPPORT project, as well as the West country Rivers Project Phase 1 on the Taw and Porridge catchments.

The three-year (2002-2004), £1.8 million programmer of work, which was supported in part by Defra and the EU (EAGGF) under the Objective One Programmed, employed the same fundamental techniques as Tamar 2000. The Cornwall Rivers Project was designed to restore the major rivers and their catchments throughout Cornwall Objective One. The initiative advances all of the strategic goals of the Objective One programmer, including raising absolute prosperity; assisting in agricultural adjustment; assisting in the transition of communities; and enhancing regional individuality. With one in three jobs allegedly dependent on it, Cornwall is known for having a high-quality environment. Changes in land use over the past 30 years or so have unwittingly contributed to the degradation of natural ecosystems, which have harmed the primarily rural catchment areas of some of Cornwall's rivers. Diffuse pollution in particular creates a problem that is well acknowledged as being extremely challenging to detect and control.

The West Country Rivers Trust's bottom-up, catchment-scale strategy is a real-world illustration of how an integrated partnership approach can be used to improve and maintain environmental quality for both people and wildlife while also generating more money, cutting costs, and maintaining employment. A more successful and highly valued environmental legacy is produced when sustainable economic practices are combined with land and water management. The creation of 666 farm management plans for land managers across the 10 catchments was a significant accomplishment and matches the intended profile. Even though the Cornwall Rivers Project only specifically targeted ten rivers, including one tributary of the Tamar, it is still important because it offers additional techniques for assessing the benefits of the Tamar 2000 project, including a post-project evaluation carried out by Bishop Fleming Chartered Accountants in 2004. This offers several evaluations of transferrable

benefits that serve to address the Tulsa two main weaknesses: a concentration on economic impact alone, and an assessment based on expected rather than actual acceptance of guidance to agricultural enterprises.

Angling 2000, which was started as a millennium project in Devon and then expanded through the Cornwall Rivers Project, was one of the legacy projects of the Tamar 2000 project. A token-based system called Angling 2000 provides opening day tickets for angling and returns its advantages to participating fishery owners. The concept was able to take off because to the decrease in readily available, reasonably priced day ticket water and the rising demand for wild salmon fishing. With Devon included, the scheme's beat count increased from 11 to 20 in 2003, the number of anglers registered increased from 172 to 1,237, and the money made available to farmers and riparian owners to support restoration and engagement increased to approximately £500 per beat. The wild fish stocks in the participating rivers were assessed using the Angling 2000 returns from 2003. It was discovered that the allegedly widespread loss in wild trout did not happen in scheme waterways. 2,759 wild trout were captured in 2003, along with 148 grayling, 40 sea trout, 2 salmon, and a few escapee rainbow trout. Farmers are embracing fishing as an alternative source of income and actively trying to manage their waters for the sake of the fish stocks as the Angling 2000 plan has shown the worth of the fishery.

One farmer saw visits increase four-fold, catches increase from 4.1 trout per angler in 2001 to 14.1 trout per angler in 2003, and the largest fish increased from 12 to 16 inches (30 to 40 cm) in the same time frame after investing the scheme's proceeds in habitat improvements suggested by the Trust. Angling 2000 results that were evaluated in 2003 showed that the programmer had led to roughly 300 overnight stays by travelling fishers, boosting the local economy. This is wonderful news for farmers, fishermen, and fish in particular. The bishop Fleming study also reviewed the community and educational work elements of the Cornwall Rivers Project. An important goal of the project is to raise public awareness of the value of water resources and associated habitat challenges as well as to include the larger community in the preservation and enjoyment of heritage. We all contribute to the issues since we use water and produce waste. We can all contribute to the solution if we have a better understanding of the problems. Community involvement took many different forms.

In total, 11 river walks were performed in 2002 and 2003, allowing the Trust's advisors to describe and demonstrate the life in a river firsthand. Including the Royal Cornwall Show, general talks and presentations have been given to 27 organizations. In 2003, Goliath Falls, Cotehele Estate, Enfield Park Camel ford, and Gram pound were the remaining demonstration sites. South Pen quiet, a location close to Island, has already seen completion of one demonstration site. A project partner organized educational signs and produced a community information pack in addition to an interactive instructional CD for elementary school students. Nine professional/technical conferences with more than 1,000 delegates have also received technical lectures outlining the advantages of catchment-scale management and GIS. The Trust advertised the initiative via its website, <http://www.cornwallriversproject.org.uk/>, in addition to regular mailings.

In this context, the Bishop Fleming Chartered Accountants evaluation report's conclusion was intriguing since it deduced concepts that apply to how the Tamar 2000 work turned out. According to the Bishop Fleming report, the Trust mostly engaged with farming companies and certain angling organizations. Professional writers created 666 farm management plans to emphasize the economic and environmental prospects for each farm or landowner. Optional grants are provided as part of the creation of management plans, with formal contracted funds being offered in about 25% of farm plans. Camel and Allen, Cobber and Loose Pool, East and West Loose, fall and Trillian, Fowey and Larry, Inn, Lyn her and Tidy, Net and Start, Otter, and Seaton were the ten catchments chosen throughout Cornwall due to financing. Jointly chosen with the Environment Agency.

Audited returns that were evaluated across all objectives and ancillary advantages included:

1. Purpose overall, one initiative priority measure 4.6, promoting the station and development of rural areas met its objectives.
2. Gains for water quality Gains for wildlife habitat o Lower risk of flooding better fishing o Boosted rural tourism.
3. Improved public education schools, neighborhood and youth organizations, websites, and newsletters.
4. The Trust effectively targeted recommendations and improved their uptake by farm businesses, demonstrating a clear awareness of the needs of farm businesses.
5. The West Country Rivers Trust and Cornwall Rivers Project have demonstrated the connection between river environment and business, and have produced major gains in both, according to a remark from one of the Trust's clients on page four of the bishop Fleming report.
6. The programmer provided links to further sources of assistance.

These findings were derived from 41% responses from a customer survey and 100% responses from a stakeholder survey. Declining river health has followed 30 years of changing land use patterns, undermined sustainable use of natural resources while also failed to provide a sustainable income to the real community.

Justification for CRP

Like the rest of the UK, Cornwall's riverine ecology continues to be threatened and frequently negatively impacted by a number of activities that work together to weaken and degrade natural ecosystems. Changes in land use over the past thirty years or more have significantly harmed Cornwall's primarily rural catchment areas. This is a local example of a relationship between land use and associated effects on rivers that has been proven by research from all over the world. Unintentionally, national and supranational fiscal changes, land use regulations, and technological advancements that were made distant from the point of application have contributed significantly to this deterioration. These reforms have frequently failed to give the rural economy a stable source of income while simultaneously undermining the sustainable use of natural resources. A very essential part of the landscape are river corridors, which are made up of the river channel and any nearby floodplain and/or foot slopes. It is well recognized that intact river marginal wetlands serve as important buffer zones for the preservation of watercourse environments.

The WRT has identified at least three significant obstacles that are impeding efforts to preserve Cornwall's river history. a lack of collaboration and community involvement to bring together those who have water and land rights with those who have regulatory, technical, conservation, and other interests. As a result, there will be resistance, which will slow down progress. Lack of a methodology that easily supports adoption of sustainable land use practices, as well as sound, useful, economical, and integrated advice. This is acknowledged as a global issue that has slowed the pace of improvement in natural resource management. In the UK, there is no one governmental authority in charge of managing wetlands, and there is no dedicated policy or comprehensive plan. While several well-meaning and caring organizations are responsible, none of them appear to be able to provide a comprehensive approach or efficient coordination. The West Country Rivers Trust thinks it's crucial to start the process of restoring and safeguarding Cornwall's freshwater legacy as soon as possible so that it can be of long-term use to the local population. The Cornwall Rivers Project is set up to achieve these goals in a way that benefits the environment, the economy, and society [5], [6].

Range of the Cornwall Rivers Project and the Tamar 2000

Initiatives aimed at managing and conserving rivers and catchments in the Tamar and Cornwall regions include Tamar 2000 and the Cornwall Rivers Project. Typically, these elements are included in the projects' scope:

1. **Assessment of Rivers and Catchments:** The initiatives entail undertaking thorough evaluations of the rivers and catchments in the Cornwall and Tamar regions. This assessment looks at the ecological health of the rivers, the water quality, flow patterns, and riparian habitat conditions. It aids in determining problem areas and setting priorities for conservation and restoration initiatives.
2. **Engagement of Stakeholders:** The projects seek to interact with a range of stakeholders, including regional communities, landowners, environmental groups, and governmental organizations. Gathering local expertise, viewpoints, and concerns regarding the rivers and catchments is a component of stakeholder engagement. It encourages teamwork and makes certain that various interests and points of view are taken into account when making decisions.
3. **Implementing Strategies:** Restoration and conservation of river habitats are the main objectives of both projects, which are located in the Tamar and Cornwall regions. Implementing strategies including habitat improvement, river channel re-naturalization, removing impediments to fish migration, and establishing buffer zones along riverbanks may be necessary to achieve this. The rehabilitation of damaged habitats and the safeguarding of ecologically vulnerable places may also be given top priority in the initiatives.
4. **Projects' Goal:** The projects' goal is to address problems with water quality in the rivers and catchments. This can entail taking action to lessen pollution sources such as sewage discharges, industrial effluents, and agricultural runoff. To evaluate the parameters affecting water quality and monitor development over time, monitoring programs may be devised. Both initiatives acknowledge the significance of climate change adaptation in river and watershed management. This can entail figuring out how climate change might affect rivers and creating plans to make them more resilient. It could involve activities like restoring floodplains, managing and storing water, and promoting environmentally friendly methods of land and water management.
5. **Education and Awareness:** Activities to enhance knowledge of and appreciation for rivers and catchments are frequently incorporated into the initiatives. This could entail planning community

gatherings, workshops, and academic initiatives for schools. The objective is to instill a sense of stewardship in people and to motivate them to take action to save and conserve these priceless ecosystems.

6. **Monitoring and Evaluation:** Implementing monitoring programmes to evaluate the success of conservation and restoration initiatives is a common task for both projects. This involves keeping an eye on habitat conditions, biological indicators, and water quality. Regular review assists in tracking success, identifying areas that need more focus, and modifying management tactics as necessary.

III. CONCLUSION

The conservation and management of rivers and catchments in the Cornwall and Tamar regions have benefited greatly from the Tamar 2000 and Cornwall Rivers Project projects. In order to safeguard and restore the health of river ecosystems, these programs have emphasized the significance of holistic methods, stakeholder participation, and cooperative efforts. The significance of comprehending the interdependence of rivers and catchments is one important conclusion that can be derived from these endeavors. The initiatives have acknowledged that rivers are a part of broader catchment systems and do not exist in a vacuum. The initiatives have been able to create more thorough conservation and restoration strategies by taking into account the entire catchment area, including upstream and downstream consequences.

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