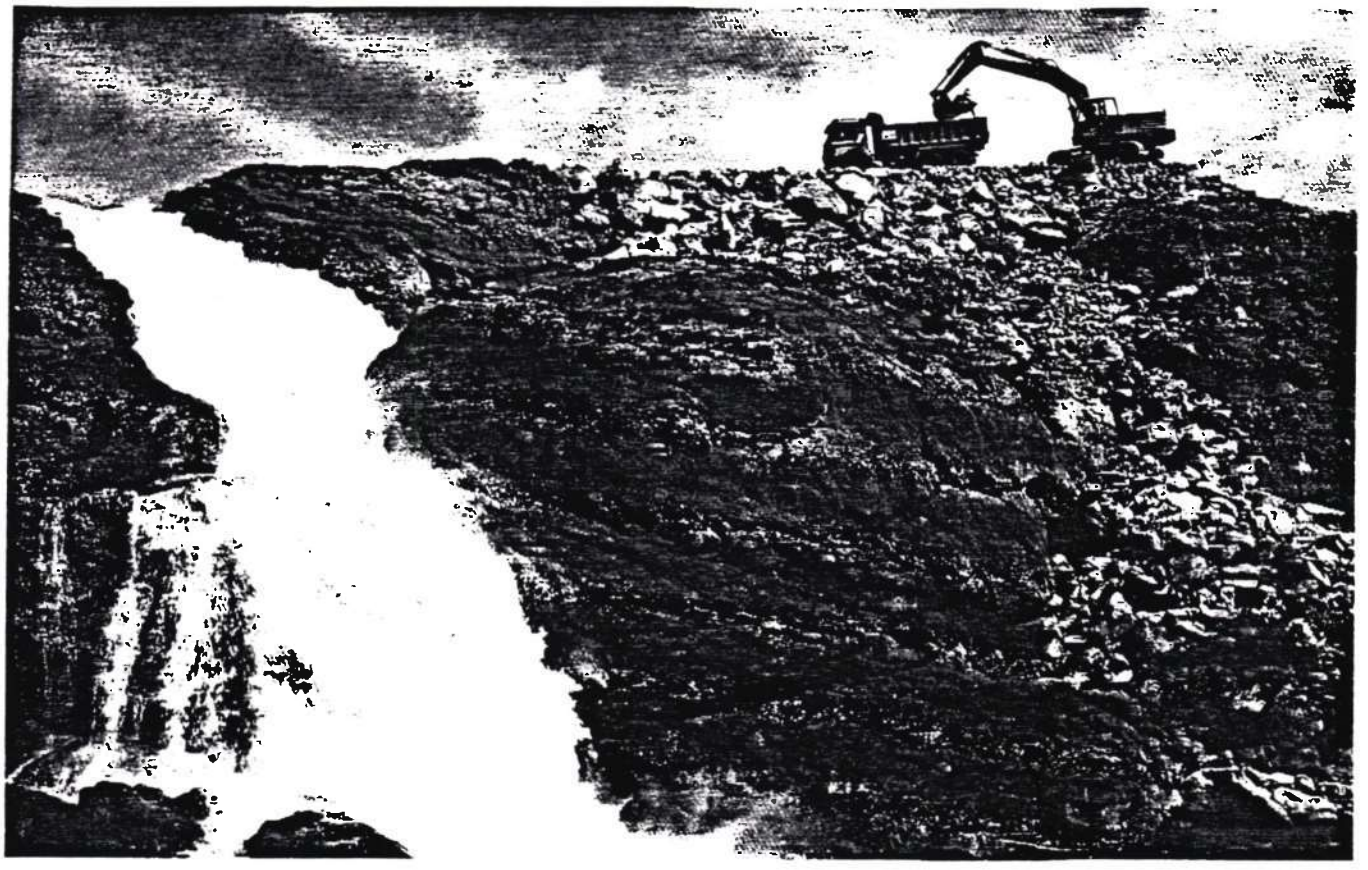

RURAL ELECTRIFICATION IN NORWEGIAN DEVELOPMENT ASSISTANCE

DISCUSSION PAPER

NORWEGIAN
WATER RESOURCES AND ENERGY ADMINISTRATION

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RURAL ELECTRIFICATION IN NORWEGIAN DEVELOPMENT ASSISTANCE

PREPARED FOR THE

NORWEGIAN

ENERGY AND WATER RESOURCES ADMINISTRATION

BY

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FOREWORD

This discussion paper was prepared in response to the recommendation of a seminar on "Rural Electrification and Norwegian Development Assistance" held at Holmen in March 1989.

The seminar was organised by the NVE under the auspices of NORAD and was attended by around forty people representing NORAD, NVE, manufacturers, consultants, academics and others directly or indirectly concerned with Norway's rural electrification assistance in the developing world.

The seminar recommended the establishment of a Task Force to discuss the issues raised and make recommendations to NORAD on its future policy on rural electrification in development assistance. This paper has been prepared as an initial input to the discussion process which the Task Force was mandated to carry out.

The background research was carried out in Oslo during the 20-23rd March 1990. During this time, the documentation made available by NORAD and NVE on past rural electrification projects was reviewed. In addition, interviews were held with representatives of Norwegian consultants, contractors and the development assistance community. A major effort has been made to ensure that the paper fully reflects and addresses the range of concerns expressed in these interviews.

Given the limited preparation time, a broad brush approach has been used. The paper is not intended as a detailed evaluation of previous projects; neither does it attempt to arrive at final conclusions or recommendations. The aim is raise issues for discussion as constructively as possible.

The first part of the paper defines rural electrification and discusses why it should be an element in Norwegian development assistance. The second part briefly reviews NORAD's rural electrification experience and draws a number of tentative lessons. The third part raises a series of options which need to be discussed in the formulation of NORAD's future rural electrification assistance polices.

The fourth part looks at some of the criteria which might be used in the identification of rural electrification projects. The last part discusses some of the institutional implications of these suggestions for NORAD and NVE and suggests what should be done next.

Thanks are due to all those who gave generously of their time and helped in the production of this paper. Neither the individuals or the organisations to which they belong are responsible for the analysis or opinions presented here. The discussion which it is intended the paper will stimulate will, however, provide an opportunity for the correction of any errors, omissions or distortions which have unwittingly been included.

Gerald Foley
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29 May 1990

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RURAL ELECTRIFICATION IN THE NORAD POLICY CONTEXT

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The aim of Norwegian development aid is to create lasting improvements in the economic, social and political conditions of people in the developing world. The primary focus has been upon food production, health, education and employment. Emphasis has particularly been placed upon helping the poorer countries and the poorer strata and groups of the population, particularly women, in these countries.

Approximately half the Norwegian aid budget is given through multilateral development agencies with the remainder being provided through bilateral channels. A notable feature of this bilateral aid has been the extent to which it has been untied, leaving a high degree of autonomy to recipient countries in the definition of priorities and the disbursement of funds.

At present, Norwegian aid is concentrated on nine main partner countries: Bangladesh, Botswana, India, Kenya, Mozambique, Pakistan, Sri Lanka, Tanzania and Zambia; assistance is also provided to a further six partner countries: Angola, Madagascar, Nepal, Nicaragua, Uganda and Zimbabwe. A recent decision has been made to include Namibia as a new partner country and Norway will act as the coordinating country for Scandinavian energy assistance. Aid is also provided for the support of regional development in the SADCC region, the Sahel and Central America.

1.1 Definition of rural electrification in NORAD assistance

Definitions of rural electrification vary widely between countries - they also change in individual countries with time and economic development.

In the early stages of national electrification programmes, rural electrification usually means bringing a public electricity supply to quite large provincial towns and district centres. Later, when the national electrification is almost complete and all the rural towns have been connected, it means bringing a supply to villages and isolated farmhouses. This latter definition is what rural electrification came to mean to many people in Norway and other European countries in the decades immediately after the Second World War.

NORAD's focus on the poorer countries narrows the potential scope of its rural electrification assistance. In the majority of its main partner and partner countries, the rural infrastructure is still limited and the national electrification programme is at a relatively early stage. In such cases, there is normally no question of providing a supply to small isolated villages and individual farmhouses. Rural electrification for NORAD therefore generally means bringing a supply to provincial towns, district administrative centres and rural growth points.

When the electricity supply is made available in such settlements, the main emphasis is usually placed upon small industrial and business uses and the provision of public services such as lighting and water pumping. The number of households connected tends to be a small proportion of the total, probably in the range 10-20% and is normally concentrated among upper and middle income families. Few, if any, poor families take a supply in the initial years.

1.2 Why should NORAD support rural electrification?

The provision of electricity supplies to towns and district centres has little immediate impact on the basic needs of the rural poor. Given NORAD's policy focus on this group, it is legitimate to ask why it should provide support for rural electrification.

The principal justification for supporting the electrification of provincial towns and growth points is the role they play in the general economic development of the rural areas. Support for basic needs in a subsistence farming economy cannot, on its own, bring about the transformation required for sustainable development in the face of fixed areas of arable land and rising population numbers. The only way out of the trap of subsistence is through diversification and expansion of the rural economy.

Although rural development strategies vary from country to country, there is more or less universal acceptance of the need for "service centres" or "growth points" in the form of well-serviced small to medium size towns. These provide a local focal point which can be used for the provision of improved education and training as well as health and agricultural extension services for the local farming community. These towns also provide facilities for crop processing, markets for agricultural produce, job opportunities for surplus farm labour, shops, entertainment and a variety of other services.

The provision of an electricity supply, on its own, will not bring about the development of such centres. At the same time, it is clear that the availability of reliable electricity supplies facilitates and encourages the emergence of a wide variety of economic activities and services which benefit people living in the town itself and those in its farming hinterland. The absence of reliable electricity supplies can, in contrast, retard development and have a negative or debilitating economic effect.

Rural electrification projects of the type supported by NORAD thus play an important role in that process described by the World Commission on Environment and Development in which "development involves a progressive transformation of economy and society". As such, carefully chosen rural electrification projects are obviously a legitimate element in Norwegian development assistance.

It is also worth noting that rural electrification is an area in which Norway is particularly well qualified to provide support to the developing world. This is not just in the supply of hydro electric equipment. It includes the supply of transformers, switchgear, conductors and other equipment and materials. There is also a vast body of relevant expertise in Norway on the technical and financial management of electricity supply organisations which could be extremely relevant to the developing world.

2.0

LESSONS FROM EXPERIENCE TO DATE

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NORAD's experience in rural electrification to date has been relatively limited. A substantial proportion has been in the provision of equipment and technical assistance for the construction of small hydro generating plant.

Among the list of projects noted in the present review were the Cuamba, Lichinga, and Corumana hydro power stations in Mozambique; the Mantsonyare and Semonkong hydro power stations and the extension of the transmission system in Lesotho; the Zanzibar distribution system; cross-border connections between Malawi and Mozambique, Mozambique and Zimbabwe, and Zambia and Tanzania.

Technical assistance has been provided in the form of a survey of Mozambique's hydropower resources. There have also been a number of feasibility studies including the Mbahu small hydro station in Mozambique, a mini-hydro station on the Luakela river in Zambia, an extension of the Mavuzi hydro station in Mozambique. A review of small hydro potential in northern Pakistan has resulted in a major programme for the rehabilitation of existing installations and some new construction.

Financial support has been given to the United Mission to Nepal for the construction of a 5 MW hydro station and to the Norwegian Baptist Church for a 150 kW hydro station in northwest Zaire. An agreement has also been signed with the Nepalese government for the construction of a 12 MW hydro station in Nepal in collaboration with the United Mission to Nepal.

In the overall electricity sector, Norway has provided equipment for Mtera hydro station in Tanzania; technical assistance, training, equipment and spare parts for the national electricity utility, EDM, in Mozambique; equipment for the rehabilitation of the power plants on the Pangani river in Tanzania; and assistance for the rehabilitation and upgrading of the Kafue Gorge hydro station in Zambia. Norway is also a principal supporter of the SADCC Energy Secretariat in Luanda.

There was also a long involvement during the 1970s and early 1980s in a planning study for the development of large hydro station in Stiegler's Gorge in Tanzania. Other electricity-related involvements include the provision of funding for a pole impregnation plant in Mozambique and the establishment of a joint-venture factory for the manufacture of transformers in Tanzania under the title of TANELEC.

In a considerable number of these cases, the NORAD contribution was in the form of equipment delivery with a limited involvement in the project appraisal or implementation.

2.1 A question of overall policy direction

The projects reviewed in the preparation of this paper succeeded in the sense that the countries concerned now have electricity supply and distribution facilities which they did not have before. From the available evidence, the various projects have usually been satisfactorily constructed and are capable of functioning as planned. In the general

development assistance context, this is a significant achievement.

The overall policy direction, however, is rather more questionable. The emphasis on hydro power is clear but the selection of projects appears to owe more to their feasibility in a rather narrow technical sense than their strategic role or ranking in the recipient countries' list of priority areas for electrification.

In particular, it does not appear as if some of the hydro projects were evaluated against the alternative of providing a diesel supply. In some instances, it seemed to be assumed that the saving of diesel fuel, in itself, provided a justification for the use of hydro power - even where auxiliary diesel was being provided or retained in operation to meet peak loads. Neither did there appear to be an evaluation of the technical, managerial and financial state of the electricity utilities receiving the NORAD assistance. This left open the possibility that NORAD funds were, in effect, being used to postpone necessary rationalisations and reforms in the management and finances of these utilities.

In short, the dominant impression of the NORAD involvement to date in rural electrification is that of a relatively fragmented programme. Rather than fitting within a consistent policy and set of funding priorities, the pattern of projects implemented so far appears to be the result of a series of responses, decided on their individual and mainly technical merits, to a rather random set of funding requests from the recipient countries. This is a result, of course, of the recipient-oriented character of Norwegian development assistance. It has, however, a number of consequences for NORAD which, arguably, have reduced the effectiveness of its rural electrification aid.

The concentration on individual hydro power projects has, for example, led to a certain degree of marginalisation of NORAD in the electrification area. Instead of being seen as having a role to play in the overall electricity planning process and the setting of rural electrification priorities, there appears to be a tendency to regard NORAD primarily as a supplier of hydro power and other equipment.

This under-plays the potential contribution which Norway can make. It is, after all, the most highly electrified country in the world. It is self-sufficient in all aspects of transmission, distribution and control systems. It also possesses the full range of expertise in billing, financing, tariff setting and the management of electric power utilities.

The lack of a comprehensive policy framework against which projects can be evaluated has also limited the scope of the feedback on experience which has been obtained. Apart from technical and financial reporting on the completion of construction contracts, NORAD has not been actively involved in a continuing assessment of how projects fit and perform within the overall electricity supply system or of what impact they have had.

A comprehensive evaluation of Norwegian development assistance in the energy sector of the SADCC countries is being finalised at present. Its results will be of major importance in the formulation of future rural electrification policies and should be considered in any discussions arising from this paper.

3.0

POLICY QUESTIONS AND OPTIONS

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Looking to the future, it is clear that a variety of policy options exist. If adopted they provide opportunities to increase the effectiveness of programmes, raise the profile of NORAD in recipient countries and the development community, and widen the potential contribution of Norwegian professional expertise and manufacturing industry. They need, however, to be discussed and balanced within the broad context of NORAD's policy objectives and relationships with its partner countries.

In looking at these policy options, it is well to bear in mind that the main beneficiaries of rural electrification are those who use the supply. Where there are social uses, such as street lighting or the provision of electricity supplies to schools and health centres, these can be provided independently of any supply to domestic or commercial consumers. It should also be noted that the main problems facing utilities are to a large extent self-inflicted - or imposed by governments - with tariffs being set far too low to provide the necessary funds for operation and maintenance let alone future capital investment programmes.

The following are among the key policy questions and options which need to be further discussed and elaborated.

3.1 Concentration of efforts

Any attempt to provide rural electrification assistance to the full range of Norway's main partner and partner countries will be far too diffuse to be useful. It is essential that efforts are concentrated in a number of countries and are planned over a time scale which is appropriate for electrification programmes. This implies a commitment to a substantial programme over a minimum period of ten to fifteen years.

The choice of countries needs to be carefully made. Rural electrification, if it is to be effective, requires that its target areas have reached a certain minimum economic level. This would tend to eliminate countries such as Mozambique and Angola where the degree of poverty and under-development in the rural areas is so great that rural electrification is rarely either feasible or a priority - unless rural electrification is regarded as the provision of electricity supplies to quite major provincial towns.

Zimbabwe, on the other hand, has a well-developed national electricity grid and an existing programme for the electrification of a large number of small rural growth points as part of the government's development strategy for the country's communal lands. It would clearly be able to benefit quickly from assistance to this programme which is presently at a standstill because of the lack of materials and equipment which must be obtained abroad.

These countries are mentioned as illustrative examples of the type of judgments which need to be made rather than recommendations. The final selection of countries would have to be made after detailed analysis and discussion of the potential they offer for effective collaboration with NORAD in rural electrification programmes. A variety of political and

other criteria outside the scope of this paper would, naturally, also have to be taken into account.

Such a concentration of rural electrification assistance would not necessarily be a complete barrier to activities elsewhere. The way would always be open to provide special assistance to projects or programmes in other countries which turned out to be particularly attractive or suitable for Norwegian funding. It would be necessary, however, to limit the proliferation of such exceptions to prevent the available resources being spread too thinly.

3.2 A broader involvement in the electricity sector

NORAD should seek to participate actively in electricity planning at a national level in countries on which it intends to focus its support for rural electrification. This would help decide on the priority which should be given to rural electrification in relation to the other needs of the electricity sector.

It would also help in the selection of the most appropriate rural electrification projects. Experience with development assistance in the electricity sector continually illustrates that the selection of the projects proposed for funding to donor agencies may owe more to institutional empire-building, corruption, prejudice, ignorance or lobbying by manufacturers and equipment supplies than their relevance to national or local needs and priorities. By looking for a broader involvement in the electricity sector, NORAD can ensure that the proper evaluation criteria are applied in the selection of the projects it is asked to fund.

An overview of the planning of the national electricity system would also enable NORAD to bring its influence to bear on such crucially important issues as tariff-setting. Some countries, for example, are continually seeking donor funding in order to expand grossly uneconomic electricity supply systems rather than controlling demand growth and raising investment funds by means of an appropriate tariff system

Obtaining such a central position in the planning process may not be practicable in countries in which a large number of donors are already active in the electricity sector. But it is precisely under such conditions that the dangers of wasting resources on inappropriate programmes or providing support to economically unjustifiable electrification policies are greatest. Where this is the case, NORAD should endeavour to establish cooperative arrangements with other donor agencies.

3.3 Broadening the scope of assistance beyond hydro

NORAD is widely perceived both in the developing world and Norway itself as being primarily interested in providing assistance for hydro electric projects. There is much to be said in favour of reducing the emphasis on hydro in the future so that it is no longer seen as the characteristic badge of Norwegian involvement. Rather than narrowing the scope for NORAD's activities this would have the beneficial effect of widening the

potential for Norwegian technical assistance.

To take the Zimbabwe example once again, the country's rural electrification programme is based almost entirely upon grid extensions. Apart from large projects on the main rivers, there is virtually no scope for hydro power. At present, this is seen by some people as a reason for not having any Norwegian involvement in the electricity sector in the country.

Yet Zimbabwe is a classic example of a country at a stage of economic development in which it is able to benefit greatly from assistance for rural electrification. There are widespread opportunities for assistance in the provision of general electrical equipment and the extension of the transmission and distribution systems. The country also offers considerable opportunities for providing aid to local manufacturers or the establishment of joint venture companies analogous to the transformer manufacturing company TANELEC in Tanzania.

At a more general level, NORAD should also take care to ensure that the design of potential rural electrification projects is not determined in advance by the choice of the supply technology. The analysis should start with the electricity needs and end with the most appropriate solution. The answer to a supply shortfall might, for example, turn out to be the rehabilitation of some transformers and transmission lines rather than a new generating station.

The same applies to generation options. If NORAD is to have a broad involvement in the provision of rural electrification, consideration will have to be given to diesel as the only feasible generation option in the majority of cases. Although diesel engines will need to be obtained from other donor agencies, Norway is well provided with the resources needed for the associated transmission and distribution system which can cost considerably more than the generating equipment. It also has expertise in the crucial area of operator training and maintenance routines.

This is not to suggest that Norway should abandon its traditional strengths in the hydro power area. It is, rather, making the point that the scope for Norwegian inputs, not just as equipment, but also in the form of management and consultancy services and the formation of joint venture companies, will be very much wider if the focus is broadened beyond hydro power. It is simply a question of mobilising the resources which already exist in Norway and identifying where they can most effectively be used.

3.4 Setting conditions for assistance

The emphasis on recipient-oriented programmes ensures that NORAD does not fall into the trap of imposing projects upon the developing world. It does, however, leave it vulnerable to the consequences of a poor selection of projects on the part of the recipients.

This can be a particular danger in the case of rural electrification where expectations about its impact are often exaggerated. It is, for example, widely believed that rural electrification can, by itself, cause rural development to take place. It is also credited with being able to reduce

fuelwood shortages, prevent deforestation, slow the rate of migration to the cities and other effects which rigorous analysis tends to show do not generally occur to anything like the extent predicted. The danger is that such alleged wider benefits are used to justify rural electrification programmes which are technically or economically inappropriate.

The main beneficiaries from rural electrification projects are those who obtain an electricity supply. Among domestic and commercial consumers, the main use, at least initially, is for lighting and electronic appliances. Small industries also use electricity for motive power. In the majority of cases, the advantages provided by these uses justify electricity prices in the range 10-20 US cents per kWh and experience shows that these prices are paid when private generators are providing the supply.

Project proposals should therefore not be taken at face value. Without sacrificing the principles of recipient-oriented aid, NORAD needs to ensure that all projects and programmes are evaluated objectively and critically before they are accepted for funding. The objective is not to restrict the recipient countries in defining their priorities but simply to ensure that Norwegian assistance funds are invested prudently and productively.

3.5 The question of tied aid

The concern of manufacturers and others that a high proportion of Norwegian development assistance is untied emerged clearly during the interviews carried out during the research for this paper. On the manufacturing and consulting side there was a widespread feeling that Norwegian interests were poorly represented by allowing other countries to supply a high proportion of the goods paid for by Norwegian funds.

There was among others, in contrast, a strong commitment to Norwegian openness and willingness to allow recipient countries to define their own priorities. They felt that allowing aid to be tied as it is in other countries was a "slippery slope" which could quickly lead to the imposition of projects on the developing world for the convenience of home manufacturers rather than their relevance to the recipient countries.

A number of those interviewed commented that the emphasis on hydro power in the Norwegian development assistance programme was because it was felt it was the country's strong point when faced with international competition in the supply of electrical equipment. In other words, focusing upon hydro power, despite the aid being untied, made it more likely that some of the benefits would flow back to Norway. The danger is that this can introduce precisely the distortions in the selection of projects which untied aid is intended to eliminate.

The issue of the proportion of aid which should be tied is a complex one and is under considerable discussion in Norway. It is not for a discussion paper such as this to try to pre-empt the conclusions of such a debate. It is, however, evident that the scope for the deployment of Norwegian resources, tied or untied, will be wider if rural electrification assistance includes the whole range of Norwegian electrical equipment as well as technical and managerial expertise rather than being concentrated on the hydro sector.

3.6 Coordination with Nordic and other donors

Coordination between donors is essential if a needless proliferation of equipment and standards as well as a waste of resources is to be avoided. NORAD should ensure that as far as possible its activities in the electricity sector are coordinated with other donors. The basis for such coordination already exists with the other Nordic donors with whom a variety of links already exist. In collaboration with the utilities in the countries concerned, such coordination can then be extended to other donors. This is an area in which, for example, NORAD support for the SADCC Technical Assistance Unit can pay particularly useful dividends.

Coordination with other donors, especially the Nordics, can also provide opportunities for useful sharing of information. A recent example of where this might have been helpful is the Urban Household Energy Project in Mozambique. This is being indirectly supported by NORAD in the form of commodity aid funds and through the Nordic Development Fund; NORAD is also providing support in the form of techncial assistance for the national power utility EDM. A Danida mission, which was deeply critical of the electrification component of the same project, though prepared to recommend support for EDM, remained unaware of the potential for sharing this information and discussing its conclusions with NORAD during and after its visit to Maputo late last year.

Efforts should be made to ensure that country studies, reports, and project appraisals in the electricity sector should be shared between the Nordic donor agencies. Project identification and appraisal missions should be encouraged to contact the other Nordic agencies as a routine part of their work.

Some of the people interviewed during the research for this paper expressed concern about competition between donors for the "best" projects and felt this was an obstacle to coordination. This is clearly a problem in the short term and will need careful consideration. In the longer term, however, it is evident that the work to be done in the electrification field in the developing world is more than enough to consume all the available funds. Moreover, experience shows that well-planned and executed electrification projects quickly lead on to others. Provided, therefore, that the short term problems are overcome, effective coordination will widen the opportunities for all donors.

3.7 Support for NGO and community management projects

NORAD is traditionally supportive of NGOs and the principle of devolution of responsibility to local community groups. In the electrification sector it has provided support to missionary organisations in Nepal and Zaire.

Worldwide experience among other agencies, however, shows the need for considerable caution when considering support for NGO or local community-managed electrification projects. The technical demands of electrification projects tend to be relatively high and require a level of expertise which is not commonly available either among the NGOs themselves or at a community level in the local populations with which they are normally

working.

One of the most crucial issues for NGO promoted rural electrification projects is that of long term maintenance and repair of installations. Electrification must be seen as a permanent developmental step; when a supply has been provided it is expected to be available for the indefinite future. Projects must therefore be able to put in place the necessary technical and institutional support system which will ensure that they will continue to operate satisfactorily long after the involvement of the external NGO has ended.

The replicability of projects is another important issue. Community-managed electrification projects should always have the aim of being widely replicated, preferably spontaneously, in other communities in similar circumstances. It is only in this way that a significant contribution can be made to the overall development of the rural areas.

In considering support for NGO and community managed projects NORAD should therefore place a high importance on such strategic considerations. Long term sustainability and the potential for replication should be key elements in the assessment of project proposals.

3.8 Renewable energy sources

Apart from hydro power, and a certain amount of wind power under very particular circumstances, the contribution of renewable energy sources to electricity supply throughout the world has so far been negligible. For the most part this is because the technologies themselves are still under development or because the electricity produced is more expensive than that from conventional sources.

In addition to its long experience of hydro power, Norway is presently at the forefront in the development of wave power. Promising results have also been obtained from prototype installations of combined wind and diesel generating plant.

Without making any judgment on particular technologies, it is important that the problems of the developing world are not increased by burdening them with unproven and expensive electricity generation equipment. Villages should not be used as test-beds for experimental technologies, leaving people at the end of the project with raised, but unfulfilled, expectations and generating equipment which they can neither operate nor replace. This has never been a feature of NORAD assistance but has, for example, happened in many cases with photovoltaic projects promoted by a number of other donor agencies.

In developing its strategies for the promotion of renewable energy sources, NORAD should clearly distinguish between research projects and those which are able to rely upon proven off-the-shelf technologies. Research projects should be recognised as such and should be the responsibility of research organisations.

Assistance in the provision of electricity supplies for the general public should be based upon the use of commercially available and cost-effective

technology. This means that renewables should be considered on a level footing with other generation options and should only be chosen when they provide the best option in technical and economic terms.

4.0

DEVELOPING SELECTION CRITERIA FOR RURAL ELECTRIFICATION PROJECTS

4.0 DEVELOPING SELECTION CRITERIA FOR RURAL ELECTRIFICATION PROJECTS

NORAD should draw up a set of conditions and selection criteria for the type of rural electrification projects it is prepared to consider for funding.

In creating such a list, the following are among the most important which need to be considered.

4.1 Existing level of development

Electricity is a derived demand; people will only use it if they feel a need for it and can afford electricity-using equipment and appliances. This means that communities must have reached a certain level of economic and infrastructural development before it is appropriate to provide an electricity supply. The provision of rural electrification should not, in other words, be seen as a "pioneering" element in the development of the rural infrastructure.

Among the indicators of an appropriate level of development are the following:

* There are reasonable good roads in the area.

* There is a reasonably active commercial and business sector.

* Diesel engines or private generators are in use for grain milling and other commercial activities.

* The level of local services such as hospitals and schools is adequate.

* There is a willingness among commercial, industrial and better-off families to pay what the electricity will cost to supply.

The existence of such indicators needs to be established by a detailed local appraisal.

4.2 Adequate financial basis for projects

Rural electrification is expensive. It is generally unlikely that projects will be able to make an adequate return on the investment over the first five to ten years. An element of capital subsidy will therefore normally be involved. This does not mean that the running costs of rural electrification projects should be subsidised to a level at which they cannot cover their running and maintenance costs.

The funding of projects in which the electricity is sold at a small fraction of its production and maintenance costs, means that the utility subsidises the commercial and upper income users who are the main beneficiaries and could well afford to pay considerably more. Moreover, demand for electricity is stimulated so that the supply system is expanded beyond the level at which it can be economically run and adequately maintained by the supply utility. Given the scarcity of resources in most

of the developing world, there is little justification for this nor is a proper use of Norwegian funds. NORAD should therefore ensure that projects to which it provides support are adequately based financially.

The provision of extremely high capital subsidies to hydro projects also needs to be carefully considered. If distortion of planning priorities and tariff systems is to be avoided, the local contribution and the charges made should reflect the high initial costs of these schemes.

4.3 The distribution system

There is no point in providing new generating capacity if the distribution system is inadequate. There are numerous instances of generating equipment being replaced or upgraded when it is the distribution system which primarily needs attention.

Excessive losses, undersized transformers and generally poor maintenance are often at the root of the supply inadequacies in rural electricity supplies. It is essential that a thorough study of the existing distribution system and whether it needs to be rehabilitated is made before any new generating plant is provided.

4.4 Management capabilities

The rural branches of many Third World electricity utilities frequently show very severe lack of management capacities. It is, for example, common to find major failings in routine matters such as the issue and collection of bills and the keeping of records.

Technical can also show severe deficiencies. Records of plant operation are poorly kept or not kept at all. Maintenance routines are ignored. Spare parts are not obtained even when they are available.

A variety of ways can be used to tackle such management shortcomings. They include improvements in the utility, increased devolution of responsibility to local offices, involvement of the local community or encouragement of private supplies.

There is no point in NORAD providing assistance to projects which cannot be kept in operation. It might even be argued that the lack of the capacity to manage an electricity supply in an area is an indication that the provision of a supply is not a priority there.

5.0

INSTITUTIONAL ISSUES

5.0 INSTITUTIONAL ISSUES

The previous sections of this paper indicate a number of ways in which NORAD assistance for rural electrification, and in the broader electrification field, could be made more effective in the future.

The overall suggestion is that NORAD should play a more active and central role in the electricity sector in a small number of carefully selected developing countries. The adoption of this would have a number of institutional implications for NORAD and these are discussed below.

5.1 Creation of institutional memory and increased assessment capacity

The development and implementation of effective rural electrification programmes needs a considerable background of technical knowledge and experience. It also requires systematic feedback on the performance and impact of projects which have been implemented in the past.

At the present moment, much of this information is diffused among consultants, contractors, NVE and NORAD itself. It is not concentrated or easily accessible in a form which enables it to be used in the development of future policies. As far as rural electrification is concerned, there is an apparent lack of institutional memory. The policy of devolution of increased responsibility to NORAD missions in recipient countries accentuates this problem.

If the effectiveness of Norwegian assistance in the rural electrification area is to be increased, it will be necessary to create an improved institutional memory in NORAD, or NVE, which can provide support for policy-making and project selection and appraisal at a mission level. In practical terms, this would imply the creation of a small cell of perhaps two or three people with the necessary expertise in electrification and development.

Among the responsibilities of such a cell would be the basic task of assembling all the available information on NORAD experience to date. It would also have the duty of ensuring that relevant reports and documents were obtained from other donor agencies, particularly the Nordics, the World Bank and the UNDP.

The rural electrification cell could also play a major role in putting together field missions, sending its own representatives at least as observers, to ensure that the broader aspects and implications of projects are kept in mind. There is a natural, and proper, tendency among consultants and contractors to take individual project terms of reference as the boundaries of their concern and not question the policy context. Such broader issues would, however, be very much the concern of the rural electrification cell in NORAD.

The regular presence of permanent NORAD representatives on missions would also ensure that a continuing and knowledgeable relationship was created with the utility and Ministry of Energy in the countries concerned. One of the beneficial results of such a relationship would be that project proposals would emerge as part of a continuing dialogue. The longer term

result would be seen in more effectively focussed programmes and an increase in impact per krone spent as well as wider opportunities for the deployment of Norwegian resources for the benefit of the developing world.

5.2 Proposed next steps

This paper has deliberately been restricted in the depth and breadth of its research. It is not intended to make firm recommendations but to raise and discuss those issues which the background research revealed to be of widespread concern. The objective is that it should thereby provide a starting point for discussions within NORAD, NVE, and the development assistance community on future policies for rural electrification within the framework of Norwegian development assistance.

It is suggested that the present draft be distributed during June 1990 to a range of representative individuals for their reactions and comments. A one day meeting should then be called in late August 1990 to produce a more formal and closely focussed set of policy recommendations for submission to NORAD.