SDNP evaluation report

Colombia, Honduras and Nicaragua

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[revised to correct formatting and typos]

Introduction

This evaluation report covers the activities of three SDNP projects in Latin America: RDS Colombia, RDS Honduras, and RDS Nicaragua, and is based on information gathered from short visits (a total of two weeks to cover the three countries, including travel times, in October, 2002) and from documentation provided by UNDP and local RDS projects.

In this introduction, the overall SDNP context and status is briefly reviewed. Since the use and availability of ICT network resources are crucial to the success of the program, a review of the Latin American Internet situation is also briefly analyzed.

SDNP – origins and mission

The concept of a "sustainable development network" embracing all developing countries was proposed by Maurice Strong during the preparatory process leading to the UNCED '92 Conference in Rio de Janeiro. Further motivation to develop it was given by *Agenda 21*, in which its Chapter 40 stressed the need for building and sharing development information resources through electronic networks.

Responding to these expressed needs and priorities, and based on earlier formulations dating back to 1989, UNDP launched two simultaneous initiatives. The first one was *Capacity 21*, a funding program to "build the capacity of local institutions to integrate economic, social and environmental issues into the development process at the national, provincial and local levels."[1] The cornerstone of this program is the Capacity 21 Trust Fund, established by UNDP in 1993. Grants from this Fund were the basis for another initiative - the *Sustainable Development Networking Programme (*SDNP).

From the original focus through the subsequent revisions, SDNP remained in essence a UNDP program emphasizing the establishment of local digital information and communication technology (ICT) tools to [1] support information dissemination and exchange for national sustainable human development, and [2] provide a worldwide network of Internet-based resource nodes on development issues.

Given its broad and ambitious mandate (aiming at 50-60 countries at least), SDNP was born with a relatively short budget allocation: its core funding was U$4.6 million for the first five years (1992-1996) and U$4.4 million for 1997-98.

1 Al Binger et al., *Capacity 21 Evaluation Report 1993-2002*, UNDP: March, 2002.

Estimates for adequate support through year 2000 would require about US$5 million per year for ongoing projects.[2]

The actual implementation of the program in many countries provides a very diversified list of extremely useful learning experiences, with varying degrees of success and failure, as well as conflicting views and practices on how projects should integrate themselves with ongoing local initiatives – a major reason for failure and/or unnecessary political conflitcs in some cases. Additionally, projects were confronted with anything from strong support through indifference to outright opposition from local UNDP resident representatives.

It is interesting to note that several years before actual formulation and deployment of SDNP, UNDP had already a history of supporting ICT projects in Latin America. One significant example has been the AlterNex project in Brazil, developed by the Brazilian Institute of Social and Economic Analyses (IBASE) in the late 1980's with financial and logistical support from UNDP (and strong commitment from the local UNDP office as well) for its initial phase (1989-1990).

AlterNex was the first Internet services provider (ISP) of Brazil (starting its operations officially in July, 1989) and a major hub for dissemination of ICTs and information services among civil society organizations (CSOs) in the country. It was also the driving force behind the pioneering Internet project for UNCED '92, and had a significant influence on national Internet policies in Brazil thereafter. It remained the sole private ISP in the country until at least 1994, and later (1997) was sold by IBASE to private investors, remaining a well-known service in Brazil until today.

Current status of SDNP country Web sites

This is a quick analysis of the SDNP country Web sites. This analysis helps to situate the projects being evaluated in the context of the current apparent capacity of the sustainable development network to provide information services through its Web portals in each country. For this review the following combination of simple criteria are used:

- URLs are responding to an HTTP request with a valid page; otherwise they are classified as "inactive" in the table below;
- sites are being updated regularly or recently (at least since a month ago); otherwise they are listed as "not updated";
- sites are mostly oriented to information dissemination and exchange on SDN-related content;

2 Kate Wild et al., *A Forward Strategy for the Sustainable Development Networking Programme (SDNP): 1998 – 2000*, UNDP: December, 1997.

- sites are mostly ISPs's Web sites and/or services portals not directly oriented to SDN-related content.

Status of SDNP countries' sites on November 08, 2002						
Country	**Reg**	**URL/URI**	**site status**	**activity**	**type**	**main activity**
Angola	AFR	www.ebonet.net	active	updated	services site	ISP/portal
Cameroon	AFR	www.sdnp.undp.org/sdncmr	active	not updated		SDN-oriented
Gabon	AFR	www.primature.gouv.go	inactive	n/a		
Malawi	AFR	www.sdnp.org.mw	active	updated		ISP/portal
Mauritania	AFR	www.iiardd.mr	active	not updated		SDN-oriented
Mozambique	AFR	www.sdnp.org.mz	inactive	n/a		
Togo	AFR	www.rdd.tg	active	not updated		SDN-oriented
Bolivia	ALC	www.coord.rds.org.bo	inactive	n/a		
Colombia	ALC	www.rds.org.co	active	updated		SDN-oriented
Costa Rica	ALC	www.rds.ucr.ac.cr	active	not updated		SDN-oriented
Dominican Republic	ALC	www.rds.redid.org.do	inactive	n/a		
El Salvador	ALC	www.rds.org.sv	inactive	n/a		
Guatemala	ALC	www.rds.org.gt	active	not updated		SDN-oriented
Guyana	ALC	www.gold.sdnp.org.gy	inactive	n/a		
Honduras	ALC	www.rds.org.hn	active	updated		SDN-oriented
Jamaica	ALC	www.jsdnp.org.jm/	active	updated		SDN-oriented
Mexico	ALC	www.rds.org.mx	active	not updated		SDN-oriented
Nicaragua	ALC	www.sdnnic.org.ni	active	not updated		SDN-oriented
Panama	ALC	www.sdnp.org.pa	inactive	n/a		
Lebanon	ARA	www.sdnp.org.lb	active	not updated		SDN-oriented
Morocco	ARA	www.minenv.gov.ma	active	not updated		SDN-oriented
Tunisia	ARA	www.ati.tn	active	updated	services site	ISP/portal
Bangladesh	ASI	www.sdnbd.org	active	updated		SDN-oriented
China	ASI	www.acca21.edu.cn	inactive	n/a		
India	ASI	www.sdnp.delhi.nic.in	inactive	n/a		
Indonesia	ASI	www.sdn.or.id	active	updated	services site	open source resources
Korea	ASI	www.ksdno.or.kr	inactive	n/a		
Pakistan	ASI	www.sdnpk.org	active	updated		SDN-oriented
Philippines	ASI	www.psdn.org.ph	active	updated		SDN-oriented
Armenia	EUR	www.freenet.am	active	updated	services site	ISP/portal
Bulgaria	EUR	www.online.bg	active	updated	services site	ISP/portal
Estonia	EUR	www.ciesin.ee	active	not updated		SDN-oriented
Hungary	EUR	www.omikk.hu/sdnp	active	page not available	services site	ISP/portal
Kyrgystan	EUR	www.sdnp.kyrnet.kg	inactive	n/a		
Poland	EUR	www.ciesin.ci.uw.edu.pl	active	not updated		SDN-oriented
Romania	EUR	www.sdnp.ro	active	not updated		SDN-oriented

The table above shows a qualification of these criteria for each of the 36 sites.

Of the 36 Web sites commonly referenced in SDNP country sites as "active", only six seem to fulfill their commitment to the original SDN mission and show recent or regular updating activity: Bangladesh, Colombia, Honduras, Philippines, Pakistan, and Jamaica. This includes two of the countries specifically considered in this evaluation report, which are the only ones from Latin America among the six.

The following group of 12 countries' sites are basically focused on SDN-related information but are not being updated regularly or recently: Lebanon, Nicaragua, Morocco, Mexico, Mauritania, Cameroon, Guatemala, Romania, Poland, Estonia, Costa Rica, Togo. Some seem to have practically no activity for more than one year.

All the other 18 sites are either not working actively on SDN-related content and/or are just business-oriented service providers, or are not active at all.

A detailed specific analysis of SDNP's output based on their main means of communication with society – the ensemble of country Web sites – is beyong the scope of this report, but the above findings suggest that, independently of the institutional form under which each project has been hosted (NGO, within an academic institution, a government department, or even a local UN office), barely over 20% of the "surviving" sites can be considered close to the program mission.

The Latin-american Internet context

Nearly all Latin American countries are confronting similar problems regarding Internet dissemination. The network has developed basically according to the US consumer-based model, in which public policy, deliberately or by default, priorizes individual access – meaning a computer connected to the Internet for an individual at home or office. Collective access facilities have not been a true priority of most governments, not to speak of the corresponding need for capacity building (for the final user as well as instructors, operators and so on).

Even though public policy is basically similar, there are significant differences in Internet penetration in the region, as the table below reveals. Nor is there a clear correlation between the levels of urban population and user densities. The fact is that in most countries the Internet still is a urban phenomenon restricted to the larger cities.

Another important element in the analysis of Internet penetration (a central

component of digital inclusion) is the relationship between user density, and geographic/social distribution of means of access. In the above table, Brazil, for example, could easily surpass Chile in user density with an aggressive digital inclusion policy in the larger urban centers – however, even with a 25% user density Brazil could still have thousands of municipalities without any local means of access to the network, if geographic and social distribution are left out of a digital inclusion strategy.

Internet user density distribution in Latin America, 2002							
Countries	**Internet users (thousands)**	**Internet hosts (per 10,000 people)**	**Pop. (millions)**	**Urban pop. (%)**	**Fixed phone lines (%)**	**Personal computers (per 1,000 people)**	**Users (% of pop.)**
Chile	2,500.00	86.73	15.0	86.0	18.0	82.3	16.7
Uruguay	370.00	212.82	3.4	92.1	23.2	104.9	10.9
Peru	2,500.00	5.60	26.1	73.1	6.8	40.9	9.6
Costa Rica	250.00	26.74	3.0	59.5	20.0	149.1	8.3
Argentina	2,500.00	129.68	37.5	88.3	19.1	51.3	6.7
Brazil	8,000.00	115.20	172.6	81.7	10.7	44.1	4.6
Venezuela	950.00	9.16	24.6	87.2	11.6	45.5	3.9
Panama	90.00	26.55	2.9	56.6	13.4	37	3.1
Mexico	2,700.00	101.07	99.4	74.6	9.6	50.6	2.7
Colombia	900.00	10.91	43.0	75.5	16.9	35.4	2.1
Bolivia	120.00	1.63	8.5	62.9	6.9	16.8	1.4
Ecuador	180.00	2.77	12.9	63.4	7.5	21.7	1.4
Nicaragua	50.00	5.36	5.2	56.5	2.9	8.9	1.0
El Salvador	50.00	0.53	6.4	61.3	5.6	19.1	0.8
Paraguay	40.00	7.61	5.6	56.6	4.3	12.7	0.7
Guatemala	80.00	5.27	11.7	40.0	4.1	11.4	0.7
Dominican Rep.	55.00	54.17	8.5	66.0	8.8	10	0.6
Honduras	40.00	0.24	6.6	53.6	4.6	10.8	0.6
Cuba	60.00	1.05	11.2	75.5	3.4	10.7	0.5
Haiti	6.00	0.05	8.1	36.3	0.8	1	0.1
Totals and avgs.	***21,441.00***	***40.16***	***512.20***	***67.3***	***9.9***	***38.2***	***3.8***
(*) Data for this table comes from a variety of sources, including UNDP's human development reports, World Bank reports, local estimates from survey agencies and others. User density figures are author's estimates for the beginning of 2002. Data on Internet user density for Cuba and Haiti needs to be verified.							

Issues on ICTS and human development

This chapter tries to discuss some key issues on the application of ICTs in general and the Internet in particular for human development initiatives. For each issue, specific comments are made regarding the findings for the projects evaluated.

Human development and ICTs

The advent of the Internet has led to a worldwide effort to propose an "information society" - which could be conceived as a social, cultural, economic and political space of equal opportunities of access to information resources, and in which generalized digital inclusion has been achieved – meaning that citizens have access to the information networks and know how to use their tools, independently of their economic status.

If this were not so, efforts to carry government information and transaction services to everyone through the Internet (an essential component of the so-called "e-government"), for example, would benefit only those who, as ICT consumers, could pay for this access. With the Internet, digital inclusion becomes an integral part of sustainable human development.

From the point of view of computer networking in general and the Internet in particular, some of the key issues which relate these technologies to sustainable human development and contribute to digital inclusion can be listed as follows:

- Universal access: existence, affordability, universality.
- Content provision: information for human development, local culture.
- Capacity building: training on network and computer systems' operation and maintenance; training on configuring and operating network services; training on developing and maintaing information systems;
- Sustainability: the challenge summarized by the phrase "once connected, stay connected".

The universal access paradigm

This is a major cornerstone of the strategic proposals on the development of computer networking in the face of objective social needs. Universal access might look like a simple concept – in essence, it means to make sure everyone is able to access the information and communication networks. Unfortunately, this is

impossible under present human development levels and trends in most countries, which makes this simplification useless for development purposes except as a vague conceptual reference.

Clearly, mapping universal access directly to every person as a short- or medium-term development objective is a utopian approach. Two simultaneous approaches to universal access in developing countries which configure an alternative to this "consumer approach" are:

- to make sure key (mostly institutional) social actors gain access to the network; these are agents who effectively act as multipliers in such a way that an ever increasing number of people end up reaping the benefits of this dissemination – even though most of them will never get to touch a keyboard or even use a telephone or see a computer; this includes schools, public health centers, labor unions, and other local organizations, as well as the municipal administration;
- to support strategic digital inclusion initiatives focused on implementing and maintaining community-based (which also means community-managed) collective access points – the so-called multipurpose community telecenters.

The risks of defining the proper approach to implement universal access policy are similar to trying to put to practice the goal of universal service in telecommunications. As odd as it might sound, in the early 1930s AT&T's proposal of becoming a nationwide monopoly - which was officially accepted - was justified on the grounds of being the only effective way to guarantee universal service.

Universal access to information and communications technologies (ICTs) should follow a process chain: universal access must exist (ie., must be available); if it is available, it must be affordable to the final user; if it is affordable, it must be unrestricted (in order to guarantee free access to available information); if it is unrestricted, it must be useful (in order to justifiy investing in it as a social expenditure priority); and, last but not least, it must be enjoyable (since an essential part of the human development paradigm is freedom for leisure).

The major challenge of universal access projects is thus to contribute to the attainment of this process chain in full, taking into account that individual access for all on an individual basis is a present impossibility.

None of the three countries discussed in this evaluation have developed any consistent universal access initiative. For the near future, both Honduras (with its rural infocenters proposal) and Colombia (with a national community telecenter program) are developing potentially significant projects.

Content provision

Just as universal access forms must take into account social needs, so does content development, packaging and dissemination. This is an essential component of the SDNP country projects – in fact, with the expansion of commercial Internet service providers the network services' component of these projects in several cases no longer makes sense and/or is no longer self-sustainable.

As seen above, and judging by the output from their Web sites, currently only six SDNP country projects are actively pursuing (with varying degrees of success) the goal of content provision.

Issues to be taken into account in content provision are, among others:

- tools for delivering and displaying contents in local idioms and dialects where international standards have not yet been established (this is an issue in Honduras, for example, in which several communities of African origin speak dialects derived from their ancestral idioms);
- implementation of suitable content management systems to stimulate information publishing and sharing (including databases) beyond mere institutional presence homepages;
- colaborative knowledge management through thematic or institutional intranets/extranets, using tools such as discussion lists, electronic conferencing and so on;
- facilitating access to internationally available information sources and services on human development through metadata referring to other Web repositories;
- training of information management personnel to make effective use of the medium.

Capacity building

Regarding network systems and services, the short and intense history of the Internet is an example that technologies of this type flourish and establish themselves where a reasonably well established academic research network (or at least a network with significant involvement of the academic community) has been built. Otherwise the outcome is uncertain – and might even work out well as exception to a rule for a while. However, without this resource there is no pool of technicians to borrow national expertise from.

In most developing countries, implementing and sustaining academic networks requires significant outside support from international development agencies - but

is a necessary pathway to local capacity building in networking technologies. This relationship has not been given adequate importance in the original SDNP project proposals, ar at least not systematically so.

Capacity building also involves learning how to effectively handle information tools provided by Internet technologies.

In the case of the projects evaluated, technical development had to rely on basic short-term training from abroad in the cases of Nicaragua and Honduras, without seeking a partnership with other networking initiatives which could provide more solid technical support. As a consequence, even today systems run with precarious technical security and reliability problems, despite the dedicated and serious efforts of their technicians.

The case of Colombia is different, since the project has involved from the beginning expertise from Colnodo – a CSO which is a member of the Association for Progressive Communications (APC), and not only has an accumulated expertise as a pioneering network services organization in the country, but also relies on the international pool of expertise of the APC.

This leads to a finding regarding the cooperative technical work within SDNP – when they do, projects seem to cooperate on technical issues on an informal basis (Colombia has been serving as a resource base for Central America, for example), but there have been no explicit strategies in the original project proposals to stimulate the formation of a pool of expertise and sharing of solutions.

Regarding the community, both Nicaragua and Honduras operate telecenters which work both as collective means of access and as training centers on the use of basic Internet tools (e-mail, Web navigation, discussion lists). The telecenter in Nicaragua is a small outfit with just five machines available – it functions as a training center, a small services bureau and as a connectivity service.

Honduras has the most well-developed telecenter service of the three projects visited, including: an access center with 20 machines; a separate training center with 12 machines and a digital projector. The training center is used by RDS Honduras and by third parties for training in computer usage, programming, use of Internet tools etc.

Sustainability

Michel Menou explains that, for social services, "the exclusive concern for financial sustainability in the short term can only lead to aberration" in relation to their

original mission.[3] This is a critical issue, since most donors require social service projects (and SDNP projects' mission are clearly social, as is essentially the sustainable human development paradigm) to be self-sustaining but clear provisions to prepare them for this is not usually included in the projects. In other words: how much a project will have to forgo in terms of its original mission on the grounds of financial survival?

None of the projects visited had those provisions in place when they started. In the case of Nicaragua, for example, after UNDP pulled out they have not been able to raise any significant amount from national or international sources. Since then, the project is being run at its bare minimum, with extreme financial difficulties. It is clear capacity was not built for them to establish a workable funding plan after the initial period funded by UNDP. This is all the more unfortunate since the group managed to build a strong network of organizations, mainly focused on environmental issues, involving CSOs, academic organizations, international agencies and the government, and which is highly regarded by most participants.

In the case of Honduras, a tremendous effort goes to seek projects in which a percentage of funding can be directed to cover operational costs. The number of initiatives in this direction, although much more successful than in the case of Nicaragua, means a heavy additional strain on existing personnel and makes it difficult to focus on the specific activities of the original mission, since efforts are diverted to many projects and funding proposals. Honduras has also not been very successful in obtaining international funding.

Colombia counts on the expertise of an experienced CSO (Colnodo) and has achieved apparently more solid support from national and international sources, but it is actually too early to tell, since the RDS Colombia project started much later than the other two, and UNDP is still much more involved with this project than it was in the cases of Nicaragua and Honduras.

The perception is that projects initially thought they would be able to compete favorably in the ISP market – particularly because all of them were pioneers or nearly so in their countries –, and this would provide basic funding for the other activities.

In the case of Nicaragua, the ability of the project to build partnerships failed in this area, developing a conflict with an existing ISP project from the APC (Nicarao) – actually, it is still not very clear why UNDP has not been able to build SDNP in the country in partnership with an existing initiative which was already grouping many CSOs and had already technical expertise in place. The ensuing problems seemed to have further weakened both projects, and Nicarao ended up by disappearing altogether.

3 Michel J. Menou, e-mail dialogue, November, 2002.

In Honduras, the project had to confront an antagonistic resident representative, who ended up by requiring the project to move from UNDP's premises, thus aggravating an already difficult situation to consolidate it as a services provider. The change of the resident representative improved relations, but a lot of damage had already been done in terms of users' confidence at a moment in which several commercial providers were already entering the market.

Actually, UNDP was (or should have been) in a far better position to advise the country projects regarding prospects for competition, partnerships and survival strategies in this area in the face of massive entry of commercial operators, but this advice, at least as far as the three projects are concerned, was never provided in a systematic way by any expert personnel.

The role of CSOs

In several developing countries some CSOs have played key roles as active participants, pioneers or supporters of national Internet development. In Peru, for example, the Peruvian Research Network (RCP) started as a CSO with adequate representation of different sectors, including several prominent development CSOs, research and education organizations, and government agencies. Among other pioneering inititatives, RCP stimulated the creation of a national network of telecenters which resulted in Peru having probably the highest density of public access centers per capita in the region. As already mentioned, in Brazil a CSO was not only responsible for creating the first Internet service provider in 1989, but also participated in defining strategic guidelines for Internet policy implementation in the country up to the creation of Brazil’s Internet Steering Committee in 1995. In Colombia, Colnodo has also been responsible for path-breaking initiatives in disseminating ICTs.

However, CSO involvement, particularly in policy formulation and implementation, but also in serving as reliable information brokers (which is part of the mission of SDNP projects), is somewhat complicated by the difficulties in characterizing true representation in this sector – not to speak of the political setting which might make independent work in this area useless in the short term or even risky. Some SDNP projects chose to organize themselves into CSOs (this is the case of Nicaragua and Honduras) from the beginning or as soon as the initial SDNP grant ended – this was seen as a way to enhance alternatives to obtain international funding, besides improving the prospects for more autonomy.

The project in Colombia is now thinking, as one of the scenarios for the continuation of SDNP in the country, to transform RDS Colombia into an

autonomous CSO. Alternatively, the project would be absorbed by Colnodo and would thus remain a CSO-based project.

ICTS and people with disabilities

The role of ICTs is crucial to enhance quality of life, as well as social and economic participation of people with disabilities, including the deaf, the blind or people affected by restricted mobility. Besides the need for specific public policies stimulating ICT practices on accessibility – and for clear mandatory standards for public service sites operated by governments -, human development activities cannot just leave aside this crucial issue.

International recommendations regarding accessibility are detailed by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium. It is typical among Web designers not to know about WAI, nor about standard accessibility testing procedures. Worse, usually they are not concerned about it at all.

During the evaluation visits, discussions on accessibility were carried out with the projects' technicians in the three countries, and advice was given by the author on the existence of guidelines, on the methods to test for compliance to these guidelines, and on the importante of extending access to people with disabilities. None of the projects' Web sites complied with the WAI recommendations at the time of the visits.

It is striking to note that neither the Terms of Reference for this evaluation nor the SDNP projects visited make any reference or present any significant activity (or even the basic knowledge) regarding Internet accessibility. The outdated technical recommendations for Internet services available on the SDNP main site do not refer to these issues at all – despite the fact that these were concerns already being discussed way before the advent of Web sites.

SDNP is of course not alone on this. The recently launched Development Gateway Program proposed and being implemented by the World Bank through the Development Gateway Foundation did not include accessibility as a relevant theme, nor its portals and sites comply with at least the "priority one" step of the WAI recommendations (essential for access by reading software for the blind, for example). Now, after consultations with specialists concerned with these shortcomings, the Foundation is explicitly formulating editorial guidelines to seriously consider this issue.

In Latin America as a whole there are very few examples of efforts towards expanding Web accessibility. One example is the National Institute for Education

of the Deaf (INES), which has an experimental multimedia sign language online dictionary at its website. INES has also incorporated the computer and the Internet as integral parts of their learning program, by installing large computer access centers well connected to the Internet, providing free access to students and teachers. Another example from Brazil is the Benjamin Constant Institute (IBC), a public center for education and treament of the blind. IBC is developing a national network of access centers in which one can print books in Braille using cheaper printers developed in Brazil by just downloading the books from IBC's online library – an important step to radically reduce costs of Braille books. It is also contributing to the development, by the Federal University of Rio de Janeiro, of special Web readers for the blind.

However, these projects are still relatively small scale and are not receiving steady or adequate public funds.

On the other hand, most of the Web-based e-government services (quite developed in Brazil at the federal government level) do not follow the basic guidelines of the Web Accessibility Initiative (WAI), not to speak of the overall W3C usability guidelines (sticking to HTML standards, identical navigation and visualization with any browser and operating system and so on). It is not uncommon for sites to be usable only with MS Internet Explorer even when the corresponding government agency is defending the use of open source software, or even when the site's programs themselves are written in an open source language.

Unfortunately, this is a gap in the strategy of SDNP regarding Internet-based information dissemination.

Use of open source software

SDNP has the implicit (or maybe unintended) virtue of beginning with the technical option of specifying UNIX as the operating system on which to base ICT tools for the country projects – but actually at the time there were practically no other alternatives for Internet-based systems. More for cost reasons than a clearly formulated commitment to open source, SDNP also stimulated the use of an open-source variant of UNIX – the Linux operating system.

In this document, the concept of open source follows Steven Weber's definition:

> "Source code must be distributed with the software or otherwise made available for no more than the cost of distribution; anyone may redistribute the software for free, without royalties or licensing fees to the author. Anyone may modify the software or derive other software from it, and then distribute the modified software under the

same terms."[4]

The discussion on the usefulness, cost-effectiveness and security of opting for open source software is now maturing in favor of its use by governments and to lower costs in community-based digital inclusion projects as well. However, from the point of view of SDNP, commitment to open source and its effective dissemination has been left to each country project (the Indonesia project, for example, went as far as turning its Web site into a Debian Linux resource site) – there is no *explicit* overall policy on software options for SDNP as a whole. This is surprisingly not a theme even in a relatively recent ICT strategy document which establishes a "UNDP Agenda for Action 2000-2001".[5]

However, UNDP's Networking and Information Technology Observatory (*http://www.sdnp.undp.org/news*) shows an editorial inclination towards open source.

Countries in Europe and Latin America are adopting or proposing to adopt (partly or totally) open source as priority for their government software purchases. This is not a radical or religious position, but is rather grounded on solid arguments such as cost-effectiveness (it is important to stress that open source is not a zero cost solution but in most cases is a much lower cost solution), control over source code (absence of proprietary "black boxes") and ensuing security concerns, and so on. As the Venezuelan government stresses as a motto of their open source policy: "open source whenever possible, proprietary software only when necessary." The SDNP projects evaluated are well positioned to participate in this discussion with a view to stimulate the tendency towards open source if they so decide.

From the point of view of user communities, open source also avoids dependency on proprietary software which might mean heavy upgrade costs even when these are initially donated (actually, proprietary software donations are usually intended to hook clients for purchases of future upgrades).

Of the three projects evaluated, RDS Colombia is the most advanced in using open source tools in developing Internet services, and seeks to champion this alternative in the country and region. The Colombian RDS portal now uses a network-oriented open source content management and publishing system developed cooperatively by APC, which could be used by other country projects, thus contributing to provide an environment for cooperative development of information dissemination tools.

As the technical host for RDS Colombia, Colnodo itself has developed a telecenter

4 Steven Weber, *Open Source and the Political Economy of Cooperation in the Information Revolution*, research proposal to the Social Science Research Council, USA, 2002.

5 UNDP, *Driving Information and Communications Technology for Development – a UNDP agenda for action 2000-2001*, New York: October, 2000.

management system and is aggressively collecting potentially useful open source tools for online training and other activities, with a view to disseminating these tools. Currently, for example, it is working with Brazil's Information Network for the Third Sector (Rits) on the deployment of an advanced open source e-learning package (Teleduc) originally developed by the University of Campinas, Brazil.

ICTS and the solidarity economy

A major issue of sustainable development is how to provide secure means for income through employment or local entrepreneurial activities such as cooperatives, trade associations, accompanying microcredit associations and so on.

This involves creating new collective production arrangements, organizing production and distribution chains to reduce or avoid intermediaries, and several other forms of economic empowerment of the local community.

In many countries the set of these activities oriented at providing income sources through productive activities to families at the community level is called "solidarity economy".

ICTs can be very helpful in providing information exchange on successful experiences, technical resources for e-commerce and microcredit transactions, and technical support for the organization of local joint economic activities. In fact, several networking initiatives exist internationally, focusing on "local integrated sustainable development" (LISD), known in Spanish or Portuguese by the initials DLIS, involving the European Union and a number of CSOs and governments in the South.

Both RDS Honduras and RDS Colombia are actively seeking ways to provide support to the solidarity economy. In Honduras, among other initiatives, RDS has helped to develop a cooperative organization of dairy producers who learn adequate, environmentally safe techniques of small-scale dairy processing. The group is able to distribute its products directly to points of sale both locally and to larger market chains.

In Colombia, RDS has developed with Colnodo open source e-commerce technologies for small entrepreneurs, and maintains a section of the RDS portal dedicated to exchange of community experiences on solidarity economy ("Comunidad Sostenibilidad en el Contexto Productivo").

Since, as mentioned, a number of similar initiatives exist in the region and

internationally, it is important for SDNP projects to seek partnerships with these programs, thus further extending the exchange of local experiences.

Infrastructural and national policy issues

Under the current network addressing scheme of the Internet, it is not possible to move data within it without access to the network root servers (currently operated by ICANN and located in the USA[6]). There is no need for a direct physical connection between a country's network and the USA for this, but in some way that network has to gain access to the root servers – thus using US backbones' connectivity for this. Also, most of the Internet-based information is stored in US servers, meaning that any country will need somehow to gain access to the US network to tap into those information resources.

Here is the problem: US backbone operators do not agree to share connectivity costs, even though US users also query servers in other countries. There is not any international agreement on this cost-sharing, which goes beyond the mandate of the ITU (since Internet traffic is generally considered value-added service over telecommunications infrastructure) or ICANN (whose mandate is just to manage domain names, IP numbers and Internet protocols). Some developed countries are negotiating bilateral cost-sharing agreemens, but this is usually beyond reach for most developing countries.

The issue is further complicated by the telecommunications privatization process which actually is a transnationalization process – for example, Worldcom now owns the main backbone provider in Brazil. Thus, cost-sharing in this case has become a matter of internal accounting for Worldcom.

In any case, this situation means that Internet traffic costs anywhere are usually fixed in US dollars. Further, since the Internet is considered a value-added service, in many countries actual prices of connectivity are an arbitrary matter usually meaning monopoly prices for most countries. While in countries like Brazil connectivity costs went a bit down given its scale of operation and market competition in backbone services, in Central American countries like Honduras and Nicaragua, for example, connectivity costs continue to represent an impossible hurdle for smaller service providers. The table below compares current local monthly costs for a local full-duplex dedicated lline at 512 Kb/s.

The striking fact shown in the table is not the lower cost in Brazil (which in any case is still several times more expensive than in the USA), but the huge cost difference between Honduras and Nicaragua, with about the same population, but

6 Of the 13 root servers, three are located outside the USA (in England, Sweden, and Japan), but these are just secondary stand-by servers for emergency situations.

in which the country with lower GDP per capita the cost is more than 2.5 times higher.

Comparative costs of leased line for Internet services provision, 2002			
Country	Monthly cost of 512 Kb/s leased line	Population (millons)	GDP per capita (US$)
Brazil	US$400	170	US$3000
Colombia	US$600	43	US$2000
Honduras	US$1100	6	US$1000
Nicaragua	US$2800	5	US$500

What the table does not show is that in any country, since the technology is the same and deployment and maintenance costs are similar in US$, technically there is no operational reason for such disparate prices. Differences in tax policy on ICT services might account for part of these differences, but would not be that significant – actually, Brazil taxes these services more than either Honduras or Nicaragua.

In the case of the three projects evaluated, RDS Colombia is the one spending the least amount of money on connectivity to keep Internet services running. A small ISP capable of serving up to 30 simultaneous users with operating costs around US$10,000 per month would spend nearly 6% of its operating costs for a 512 Kb/s leased line in Colombia, 12% in Honduras and 28% in Nicaragua.

Actually, RDS Nicaragua spends about 25% (more than US$1,000) of its monthly budget to pay for a 128 Kb/s line, which means a near impossibility to expand on Internet services (which are already requiring urgent bandwidth expansion) unless additional operating funds are obtained.

The example makes clear that there is plenty of room to negotiate better pricing policies with a view to stimulate expansion of Internet services, particularly at the local level (cybercafes, small telecenters, small ISPs etc).

Colombia
Project COL/97/003

Data	*Value*	*Year*	*Obs*
Population (millions)	43	2001	
GDP (US$ billions)	86	2001	
GDP per capita (PPP US$)	6248	2000	
Poverty level (%)	19.7	2001	people living below US$1 a day
Adult literacy (%)	92	2001	
Urban population (%)	75.5	2001	
Telephone main lines	169	2001	per thousand people
Cellular phones	53	2001	per thousand people
Personal computers	35.4	2000	per thousand people
Networked PCs (%)	62.4	2000	
Computers installed in education (thousands)	118.8	2000	
Internet hosts	1.9	2000	per thousand people
PCs connected to the Internet (%)	2.9	2000	
Internet users (%)	2.1	2000	
Average cost of Internet access	14.00	2000	for 20 hours/month
Cost of 512 Kb/s leased line (US$)	600	2002	Dedicated local link to Internet backbone
ICT expenditures (US$ billions)	10.4	2001	
ICT expenditures per capita (US$)	230.90	2001	
UNDP HDI	0.77	2000	UNDP human development index on HDR 2002 (ranked 68th)
UNDP TAI	0.27	2001	UNDP technological achievement index on HDR 2001 (ranked 47th)

Introduction

Like most other developing countries, Colombia is no exception to the general effects of globalization on economic priorities. However, in addition to the consequences of globalization for increasing unemployment and perpetuation of economic, environmental and social imbalances, Colombia must also cope with

the particular situation of conflict affecting the entire nation, involving a mix of armed political resistance with massive production and export of cocaine and heroin.

In effect, the expansion of coca and poppy plantations is not only driving other crops off productive lands but also acting as quick predators to the rainforest, thus affecting the climate, flora, fauna, and major watersheds.

The counteracting actions of the U.S.-backed anti-drug operations in trying to destroy plantations result in heavy contamination of air, soil and water with non-biodegradable herbicides. Attempts to use so-called "natural" herbicides like genetically engineered coca- or poppy-killing fungi since the early 1990s have not been effective and its consequences are uncertain, since there is no assurance the fungi might not mutate and start to act against other flora and even fauna. Extensive water contamination is of particular concern since Colombia is one of the largest natural repositories of fresh water in the world.

Any strategic actions on sustainable human development in the country must take into account the effects of this massive devastation driven by all sides in conflict, in a situation in which seeking or even proposing appropriate development strategies might mean serious risk of being victimized by violence.

In this situation, the achievements of RDS Colombia in stimulating the joining of national forces around sustainable development strategies have been very significant, pointing at the importance of maintaining and further developing RDS Colombia as a resource center and major meeting point for key people and organizations who can make a difference as opportunities arise. Of particular interest is the effort to work, through association with networks of CSOs, directl with the municipalities on sustainable development initiatives, including solidarity economy projects.

Regarding ICTs, Colombia occupies the 10th position in Latin America in user density – 2.1 users per 100 inhabitants, with access concentrated in the major cities only. Reaching smaller municipalities far from the larger centers is difficult also because of the conflict – paramilitary or guerrilla groups frequently destroy communications lines, forcing digital inclusion strategists to think about more expensive solutions like satellite links (in which the land stations are also at risk). The national government is now engaged in a major proposal to extend connectivity to all municipalities in the country, and RDS Colombia is actively participating in the proposal's discussions.

The original RDS Colombia's feasibility study notes that Colombia has introduced sustainable development as an explicit goal of nation and society in its National Constitution of 1991, thus establishing the legal base for ample cooperation between state institutions and other sectors of society on this theme.

Project background

The original feasibility study developed in 1996 defines the mission of RDS Colombia as "to be the instrument through which awareness is disseminated, promoted and generated among the various actors of society on the principles, recommendations and formulations expressed in Agenda 21 [on sustainable human development]." The following is the list of central activities to be carried out by RDS Colombia as expressed in the study:

- to serve as an active communication means among members of society for decision-making and activities related to sustainable development;
- to implement an information system to support information demand around its main theme;
- to serve as a lever to empower organizations in the use of ICTS;
- to stimulate true information exchange.

The evaluation made at the request of UNDP at the end of year 2000 classifies the overall results of the project as "satisfactory" on the average of several evaluation criteria. Of the seven mission-related objectives of the original project proposal, six were considered as highly satisfactory, and one as satisfactory (table below).

RDS Colombia Levels of success regarding project objectives 1997-2000	
Objective 1 to identifiy and organize representative development sectors in a dynamic and agile structure which facilitates the coordination, animation and follow-up process of implementing SDN in Colombia	**highly satisfactory**
Objective 2 to define and install the ICT electronic infrastructure for SDN Colombia as a facilitating tool of the information process for the network, takind advantage of the technical and human resources available in the country	**highly satisfactory**
Objective 3 to ensure implementation of SDN activities through the executive coordination team as an intermediary channel between members and beneficiaries of the SDN	**highly satisfactory**
Objective 4 to strategically plan working contents to be covered by the SDN starting from capabilities and priorities regarding collecting, analyzing, managing and exchanging experiences and information among its members	**highly satisfactory**
Objective 5 to contribute to the process of analysis, dicussion, training and exchange in the search of common solutions to sustainable development through participatory information processes	**highly satisfactory**
Objective 6 to establish adequate coordination and information exchange mechanisms with government instances with the goal of offering information inputs which support national policy planning on sustainable development	**highly satisfactory**
Objective 7 to ensure the activation of mechanisms allowing for economic sustainability of the SDN in the shortest period of time	**satisfactory**
Source: UNDP, *SDN Colombia Evaluation Report 1997-2000*, February 2001.	

Among the national organizations taking part in the project's Coordinating Committee are:

- Andi (National Industrial Association)
- Cecodes
- Colciencias (Colombia's research support organization)
- Colnodo (CSO, one of the first Colombian ISPs, a member of the APC)
- National Planning Department (central government)
- Tierra Nueva Foundation (environmental CSO)
- Ministry of the Environment
- UNDP

Internet service facilities were initially installed at the Ministry of the Environment and at the Colnodo operations center – a UNIX server was installed in each location and each one was connected to the Internet through a 256 Kb/s dedicated line. Through these servers all the basic Internet services were provided to RDS Colombia members.

The project has been responsible for developing a number of pioneering and sophisticated electronic services initiatives, such as:

- An e-commerce solution (called "Ecomerz") covering of electronic transactions and delivery, involving companies and institutions such as Proexport, DHL, Visa, Mastercard and Remit. The entire system has been developed on open source software and has been made available under GNU free software licencing.
- Municipal Information System – a publicly Web-based municipal information system using clickable departmental maps.
- An Institutional Memory database and a database on industrial contaminants for the Ministry of the Environment. Both databases are searchable through a Web-based interface and open to any Internet user.

Expenditures of the project in the initial three years of operation (from October, 1997 to December, 2000) were distributed according to the table below. Of the US$177,400 originally allocated by UNDP, only US$102,030 were effectively disbursed during the period.

During this entire period the project has been hosted by UNDP in Bogotá and operated using technical infrastructure from Colnodo and the Ministry of the Environment, which partly explains why more than 2/3 of the grant have been allocated human resources related to information and network animation.

At the time, RDS Colombia personnel consisted basically of:

- a Webmaster also in charge of updating information into the RDS portal;
- a content manager responsible for selecting and organizing the portal content;
- a liaison person doing institutional neworking tasks (animation, facilitation).

RDS Colombia – expenses 1997-2000		
	US$	**%**
Personnel	72,441	71
Outsourcing of contracts	9,183	9
Publications	4,081	4
Travel and perdiem	3,469	3
Equipment purchase and maintenance	2,041	2
Training expenses	1,530	2
UNDP grant administration	3,571	4
Other costs	5,714	6
Total 1997-2000	**102,030**	**100**

Technical operation of the network has been in the hands of Colnodo's technical team, while project financial administration has been handled by UNDP.

The table below shows a summary of income and expenses for the period from 1999 to June, 2002 – including only the financial flow handled by Colnodo. According to the financial data provided, the project is not generating income since September, 2001.

RDS Colombia – Income and expenses flow, 1999-2002, in pesos					
Years	**Income**	**Colnodo commission**	**Net income**	**Expenses**	**Balance**
1999	4,769,570	381,566	4,388,004	1,903,449	2,277,824
2000	15,108,185	1,199,901	13,908,284	12,919,605	3,266,503
2001	4,399,726	351,712	10,981,968	2,557,952	11,690,519
2002 (to June)	0	0	0	11,873,327	-182,808
Totals	**24,277,481**	**1,933,179**	**29,278,256**	**29,254,333**	**-182,808**
Income and expenses flow, 1999-2002, in US$ (rate: 1 US$ = 2,200 pesos)					
Years	**Income**	**Colnodo commission**	**Net income**	**Expenses**	**Balance**
1999	2,167.99	173.44	1,994.55	865.20	1,035.37
2000	6,867.36	545.41	6,321.95	5,872.55	1,484.77
2001	1,999.88	159.87	4,991.80	1,162.71	5,313.87
2002 (to June)	.00	.00	.00	5,396.97	-83.09
Totals in US$	**11,035.22**	**878.72**	**13,308.30**	**13,297.42**	**-83.09**

Overview of current activities and prospects

The Human Network initiative

The major conceptual change in the project has been proposed in 2001: the consolidation of a *Human Network* on sustainable human development, with RDS Colombia serving as an information and facilitation hub through its Internet portal. The main goal of the Human Network is to facilitate the interaction within and among *communities* of social actors (especially government in its several levels, academic sector, and civil society organizations).

Organization of the portal for this new orientation, as well as the work of a facilitator to develop partnerships with those communities, started in October, 2001.

The main thematic areas for structuring the communities are related to the areas of activity of UNDP in Colombia: environment; culture and peace; institutional strengthening; sustainability in production systems.

The main specific objectives of this work have been:

- to establish an strategy for RDS to become a network of people and of social processes;
- to make sure RDS is technically designed as an ICT tool to facilitate the processes of information and capacity building;
- to develop a common working strategy with the different partners and colaborators of RDS to consolidate the human network.

The project seems to have been very successful in attaining these objectives. It continues to keep a close relationship with certain government departments (in particular with the Ministry of the Environment), has further developed its relationship with several sectors of civil society, and has established strong links with the academic sector through the engagement of students and university departments in common information production, analysis and exchange activities.

However, given the lack of financial resources, the project has not been able to maintain a full-time facilitator for this community-building process (his job has been terminated in June, 2002). All colaborators and partners interviewed agree that without this facilitation the mobilization process around the communities cannot be maintained. Actually, a number of new community mobilization

opportunities are developing in Colombia in several regions, and without this liaison RDS cannot keep in touch with them.

Institutional organization and sustainability

A business plan elaborated about two years ago indicated a few alternatives for the project to move to a new institutional arrangement. Among them:

1. to continue as it is today – a project hosted and operated by Colnodo, and managed by UNDP;
2. to be absorbed entirely by Colnodo as part of its information services activities;
3. to become a project under the Ministry of the Environment;
4. to constitute itself as a new civil society organization, keeping its current partnerships through participation in the CSO's board and colaborative agreements.

Most of the people interviewed discard alternatives [1] and [3], since the first one is not proving to be a sustainable solution to the project, and the third one would turn the project into a government activity, in practice dismantling the web of relationships with several other social sectors. Colnodo seems to be comfortable with both options [2] and [4]. In the case of the fourth option, several of the current operational and hosting arrangements can be maintained as such, but the entire financial and strategic management of the project would become independent from UNDP.

Given the difficulties in obtaining funding for the project, and in order not to risk jeopardizing its central and most visible activity (the information dissemination and exchange services through the new Internet portal), option [4] should probably be carried out only if initial funds for the transition are secured and a solid sustainability perspective in this scenario is assured.

The best solution seems to be to adopt option [2] in the short-term and, depending on periodic evaluation of the project's evolution and resources available, migrate to option [4]. Currently about US$35,000 per year are needed to maintain the project's team, including the restoring of the Human Network's animation and facilitation activities.

Internet presence

Access to the RDS Colombia portal has been reasonably intense, although by a seemingly small number of users, as the table below shows. Actual number of

individual users cannot be estimated precisely, since RDS Colombia's portal is an open Web site. This means that many individuals can query the site from the same client machine or network and appear as a unique user in the table below.

RDS Colombia – Web access profile for October, 2002		
Total hits		**563,144**
Total files		**354,824**
Total pages		**126,292**
Total visits		**21,965**
Total KBytes		**5,604,636**
Total clients		**16,053**
Total URLs		**2,220**
Total unique users		**64**
	Average	**Max**
Hits per hour	**756**	**10,018**
Hits per day	**18,165**	**34,147**
Files per day	**11,445**	**23,211**
Pages per day	**4,073**	**14,022**
Visits per day	**708**	**973**
Kbytes per day	**180,795**	**25,2217**

RDS Colombia and digital inclusion initiatives

The project has been making efforts in several areas which might contribute to enhance digital inclusion efforts in the country. This includes capacity building activities related to the Human Network. The project has established relationships with Rits and Unicamp in Brazil to develop an Spanish version of the open source e-learning system called Teleduc for specific training courses. This system is already being used for specific online training activities.

The project has been consistently training members of groups which currently make use of the project's technical platform to disseminate information on their activities on environment and sustainable development (events, courses, seminars, news and so on). It also provides training to students who can contribute to the process of producing and disseminating this information within the universities. Actually some students have been able to gain formal credits in their courses as a result of this work, which provides a significant additional stimulus for their participation in this process.

The project also provides support to community-based Environmental Observatories which seek active local participation in specific environmental

problems affecting them.

Closing remarks and recommendations

RDS Colombia seems to be one of the most promising among the surviving SDN projects visited. However, the lack of an institutional definition and adequate international funding support might lead it to failure.

This would represent a major social capital loss in Colombia, since the project has consolidated itself as the Internet reference center for sustainable development strategies in the country, and has managed to build an extensive and diversified (both socially and geographically) network of organizations and common initiatives.

The project has a number of promising characteristics for achieving sustainability, including:

- its teaming up with the technical expertise of Colnodo;
- the development of a solid base for Web-based transaction systems (the Ecomerz platform);
- its clear competence in developing open source alternatives for Internet services, software and tools;
- its advanced knowledge of systems for effective delivery of organized information;
- its consolidated image in the country as a reference on sustainable development;
- its political capacity, through Colnodo, to establish solid partnerships with many national and international networks and initiatives, for example, the Global Gateway program of the World Bank, the APC, and the coalition of Latin-American telecenters somos@telecentros etc.

These assets should be considered as key components for an strategic plan to guarantee survival and further development of its activities.

Honduras
Project INT/93/006

Data	*Value*	*Year*	*Obs*
Population (millions)	6.6	2001	
GDP (US$ billions)	6.4	2001	
GDP per capita (PPP US$)	2456	2000	
Poverty level (%)	24.3	2001	people living below US$1 a day
Adult literacy (%)	75	2001	
Urban population (%)	54	2001	
Telephone main lines	46	2001	per thousand people
Cellular phones	24	2001	per thousand people
Personal computers	10.8	2000	per thousand people
Networked PCs (%)	n/d		
Computers installed in education (thousands)	n/d		
Internet hosts	0.2	2002	per thousand people
Internet users (%)	0.6	2002	
Cost of 512 Kb/s leased line (US$)	1000	2002	Dedicated local link to Internet backbone
ICT expenditures (US$ billions)	n/d		
ICT expenditures per capita (US$)	n/d		
UNDP HDI	0.64	2000	UNDP human development index on HDR 2002 (ranked 116th)
UNDP TAI	0.21	2001	UNDP technological achievement index on HDR 2001 (ranked 61st)

Introduction

Honduras (and to varying degrees most of Central America, including Nicaragua) is going through an aggressive process of integration to the globalized economy – in fact, the entire country is an Industrial Free Zone, in which worldwide manufacturers can install "maquiladoras" anywhere.

Despite the fact that the extreme poverty level presented by the World Bank is around 24%, there is widespread poverty in the country, which is, as most of the region, extremely vulnerable to tropical storms of disastrous proportions, the

most recent of which (Hurricane Mitch), in October 1998, devastated nearly two million homes. The overall poverty situation is described by the recent UNDAF Document for Honduras:

> "In the last decade Honduras has registered important political, economic and institutional advances which leverage the basis for a continuous growth, more participation from civil society, and more equity. In fact, the country has gone from a low to a medium level of human development. However, despite these achievements, it can be verified that the advances have been insufficient and that, in particular, poverty and inequality continue to be the main challenges for development and democracy in Honduras. In 1999, 66% of the Honduran households were below the poverty line. The impact of Hurricane Mitch increased the percentage of poverty by 2,8% between 1998 and 1999, affecting the positive, albeit slow, reduction tendency until then; besides, poverty incidence, according to area, varies in that in the urban sector 57% of households are below poverty line, while in the countryside poverty reaches 75%. In the cities, 37% of households are in extreme poverty, while in the countryside they are 61%."[7]

Further, the *Poverty Reduction Strategy Paper* for Honduras (elaborated between January, 2000, and May, 2001) states:

> "Each percentage point of per capita GDP growth reduces poverty by 0.65 points, while the Latin American average is 0.94 points. This low rate of transformation of GDP growth into poverty reduction reflects the limited access to productive assets, including land, credit and secondary and technical education, as well as the biased structure of income and wealth distribution."[8]

The official economic strategy of converting the entire country into a free zone will quite probably not help in changing this situation – instead it might increase the transfer of resources to the rich, as other free trade and free industrial zone experiences have shown.

Regarding ICTs, Honduras is in the lower end of the table (last before Cuba and Haiti) in Internet user density in Latin America, and one of the lowest in phone lines density. Thus, it becomes difficult to make effective and extensive use of Internet technology to reach the majority of the population in services such as e-government, e-commerce, information dissemination, and community access – some of the significant components of deploying the Internet for sustainable development.

Recent statistics show there are about 25 Internet services providers reaching no more than 40,000 users in the country. At the time the SDN project started there were no Internet services providers in the country, unlike in Nicaragua and in Colombia.

7 UNDAF (United Nations Development Assistance Framework) Honduras, 2002, page 12.
8 Honduras, *Poverty Reduction Strategy Paper*, May 2001, page ii.

Project background

The SDN project in Honduras was scheduled to start on February 01, 1995, with a budget from Capacity 21 funds in the amount of US$200,000. It actually started in practice before this date as the continuation of an existing UNDP project in Honduras.

At the time the national government, through SECPLAN (Secretaría de Planificación, Coordinación y Presupuesto) was working on a system for planning, coordination, administration and evaluation of international cooperation, including the effort to formalize a national coordination towards sustainable human development in Honduras.

The government at the time understood that this meant to reorganize certain state structures, to create a macroeconomic development environment, to reorient available resources and to call on active participation of civil society. The main components of this strategy were described as:

- institutional strengthening and coordination;
- social policy for sustainable human development;
- economic growth for sustainable human development;
- sustainable environmental development.

The SDN project was built upon several initiatives on environment and sustainable development which were being carried out by UNDP in the country at the time (at least six environment-related projects in several regions of the country). In fact, UNDP initiated a similar project in 1992-1993, called RIDES (*Red de Información de Desarrollo Sustentable*), when it initiated the operation of a basic computer and network infrastructure – this equipment was later transferred to the SDN project.

The SDN project document described the key partners in the project as follows:

- institutions from the government of Honduras – all centralized and descentralized entities of the Honduran State;
- non-governmental organizations – the private non-profit development organizations in the country;
- private companies – consulting firms, agroindustrial and forestry companies;
- educational institutions – all institutions working in education, research and information dissemination;
- communication institutions – media companies (printed media, radio and television).

Among the project documents for the three countries evaluated, this is the only one which explicitly mentions the mainstream media as a key partner.

The preliminary list of users of SDN network services is in the table below. More than half of them were national or international NGOs, and became connected to the project's Internet services between 1994 and 1995.

SDN Honduras – Preliminary List of Users, 1995 (*)	
Institution	**Type**
1. Save The Children	international NGO
2. Fundación Vida	national NGO
3. EDUCSA	government
4. SECPLAN	government
5. BIO-CONSULT	private company
6. AFE-CODEHFOR	government
7. CIDICCO	government
8. RECURSOS HIDRICOS	government
9. HONDUTEL	government
10. AHPAAF	national NGO
11. ZAMORANO	academic
12. IICA	international NGO
13. UNITEC	academic
14. FUND.PASTOR FASQ.	national NGO
15. PASTORAL SOC/JUT	national NGO
16. CARE	international NGO
17. VECINOS MUNDIALES	international NGO
18. CUERPO DE PAZ	US government
19. CADERH	national NGO
20. CENTRO DE ESTUDIOS Y CONTROL DE CONTAMINANTE (CESCCO)	government
21. COSUDE	national NGO
22. CARITAS HONDURAS	international NGO
23. COHASA/GTZ	national NGO
24. FOPRIDEH	national NGO
25. ODEF	national NGO
26. CCD	national NGO
27. FAMA	international NGO
(*) In a few cases the actual nature of the organization is not clear, but this does not change significantly the distribution among types.	

The table shows that the project from its beginning has played an important role as disseminator of network technologies among civil society organizations in Honduras. Several of the prospective partners participated in a demonstration workshop carried out in October, 1994, to explain the mission and objectives of RDS Honduras and demonstrate its Internet technologies. By August, 1995, 64 institutions were connected to RDS Honduras.

From the beginning, an effort has been made to keep in close touch with the

national telecommunications monopoly, Hondutel, to seek the best possible ways to establish connectivity with the participant organizations – a very difficult effort given the precarious state of phone lines in Honduras. At the time (1994-1995) Hondutel was starting to experiment with ISDN (a last-mile digital connection planned to run in Honduras at 64 Kb/s through standard phone lines) and expressed interest in making available this technology for the project. Hondutel was also developing its packet switching network (Hondupaq, based on the X.25 standard) which could also be used to connect certain institutions. A research-oriented network called Hondunet was also being planned in partnership with academic institutions and funded by the OAS.

In September, 1994, the chief project technician, Erlin Palma, who is still working with RDS Honduras in the same capacity, was hired. She has proved to be a very competent network technician with expertise in several other important aspects of the project since then.

Actually, during 1995 RDS Honduras experienced an exceptionally intense range of crucial activities to consolidate the basic foundations of the project. Among these:

- intensive capacity building with more than 100 partner organizations in the use of Internet technologies throughout the year; this included actual training, installation of connection facilities, and production of basic user manuals; from the beginning of the project to the end of the 1995, about 110 institutions were connected to RDS Honduras;
- creation of a User Board (*Junta de Usuarios*) composed of eight members to contribute in orienting project strategies;
- establishment of the domain name and IP number administration for Honduras;
- technical training of RDS personnel in Bombay, India, as part of a training course promoted by SDNP;
- assessment of the members' needs for information services;
- technical support to several information systems projects at the government level, including: National Cultural Information System; National Environmental Information System (SINIA); information systems on pesticides for the Ministry of Health; Legislative Information and Research Center (CIEL), at the Legislative Assembly; education information system for the Ministry of Education;
- building working relationships with regional initiatives besides SDN projects, such as the Central American Electronic Communications Committee (CCCE), the Earth Council and others.

At the end of 1995 a new coordinator was selected, Raquel Isaula, who continues to work as such until today. The beginning of 1996 marks the period in which RDS Honduras starts to concentrate on information-sharing and facilitation, as part of the content components of the project. As a consequence, a large number of

moderated e-mail lists have been created on most themes related to the specific activities of the member organizations.

Also in 1996 a decision was made to share responsibility for the operation and maintenance of the "hn" ccTLD (country-code top level [Internet] domain) between RDS Honduras and Hondutel. The arrangement meant that RDS Honduras will continue to be responsible for the ccTLD (thus providing the registration services), while Hondutel will host the primary DNS server, while a secondary, backup DNS server will remain with RDS Honduras.

It was during 1997 that the project finally achieved its full-time 64 Kb/s connection to the Internet through Hondutel. During this year the project initiated the use of WWW technologies with the activation of its first HTTP server and initial provision of Web-based services.

In general, the project continued to perform its activities with reasonable efficacy until the formal end of the UNDP project grant (1998), given the limited resources available, the lack of an autonomous institutional structure, and the difficulties in obtaining alternative sources of funding.

A unusal episode in 1996 marks one of the difficulties of the SDN program as a whole – the lack of a consistent agreement of support to local SDNs by local UNDP representatives. In the case of Honduras, the local representative had a conflicting relationship with the project, to the point that in 1996 RDS Honduras was thrown out of the UNDP offices it was occupying until then. The team had to rush to find a suitable alternative to host the equipment and continue to run the services. Later on, with the change of the resident representative, the local UNDP office became more supportive. This incident is unexplainable in light of the project's achievements, and is a lesson to UNDP as well – making sure local projects count on full support of the local UNDP authority.

At the end of 1998, RDS Honduras had more than 300 institutions connected to it and distributed throughout the country (although most of them are in the department of Francisco Morazán) – a very significant achievement given the resource limitations. In 1999, it became an independent NGO.

In October, 1998, Honduras was severely hit by Hurricane Mitch. A writer at the time said RDS Honduras was at the right place at the right time when Mitch struck, giving the project the opportunity to become a major reference center and information hub for the grass-roots disaster-relief effort. RDS Honduras was up to the challenge and developed an exceptional work in networking, information exchange and coordination through its Internet communications system. This consolidated its reputation as a key player in strategic sustainable development activities in Honduras.

Statistical overview of project as of 1999

The following tables present a summary of the status of RDS Honduras' activities in 1999, as informed by RDS staff, and provides a good overall picture of the extensive range of activities developed by the project.

RDS Honduras 1999 – membership by sector	
Sector	**Members**
National NGOs	129
Government organizations	35
International organizations	31
Private companies	21
Grass-roots organizations	19
Academic institutions	5
Consulting firms	14
Subtotal	**254**
Individual consultants	50
TOTAL	**304 full members**

RDS Honduras 1999 – membership distribution by departments			
Department	**Members**	**Department**	**Members**
Olancho	6	Comayagua	8
Copan	7	Lempira	3
Ocotepeque	4	La Paz	2
Choluteca	7	Intibuca	4
Atlántida	5	Colon	5
Santa Bárbara	3	Islas de la Bahía	1
Valle	3	Gracias a Dios	4
Cortes	11	Francisco Morazán	226
Yoro	4	El Paraíso	1

RDS Honduras 1999 – Distribution of technical assistance services	
Type of service	**Number of calls**
Technical problems	102
Software installation	70
Restoring connections	136
Total calls answered	**308**

RDS Honduras 1999 – Partnerships with other networks			
Network	**Outreach**	**Network**	**Outreach**
SDNP	international	FONAC	national
SDNP-CA	regional	INTERFOROS	national
FORO REDCA	regional	Foro Ciudadano	national
PLATAFORMA C.A.	regional	Red de Jóvenes	national
APSIH	nationall	Colectivo de Mujeres	national
ANAFAE	national	FOPRIDEH	national
CONASEL	national	ASONOG	national
CNA	national	REDNA	national
COLABORA	national	COIPRODEN	national
Foro de Medioambiente	national	Derechos Humanos	national

RDS Honduras 1999 – Capacity building activities			
Type of activity	**Events**	**Participants**	**Schedule**
Introductory sessions	83	166	2 hours each
Demonstrations	36	288	2 hours
Seminars	9	108	4 hours
Training workshops	16	128 government 119 NGOs	2 days each
Meetings	3	416	1-3 days

RDS Honduras 1999 – Capacity building events by themes		
Type of activity	**Theme**	**Schedule**
Seminars	Unified Forestry Code	4 hours each
	Genetically Modified Plants	
	Mapping CSOs	
	Organizing the Environmental Alert site	
	Honduras forests' site	
	Reconstruction and Transformation	
	Statistical Applications in Agriculture	
Workshops	Internet services	2 days each
	Web page design	
	Metalite and Corpmet software	
	Meatadata server administration	
Seminar/workshop	"Colaborative Mechanisms Between Civil Society and the National Congress"	1 day
Meeting	Presentation of the site "Consolidation of Citizens' Participation"	3 hours
International meeting	"Sustainable Rurality Based on Citizens' Participation"	3 days with 11 donors and 216 participants

RDS Honduras 1999 – Information on Web sites		
Area	**Unit**	**Value**
RDS Honduras Web site	Page numbers	3,486
Web site queries	Number of queries	29,880 from Jan.12 to Dec.18
Date with the most queries	Number and date	501 on Nov.18
Day of the week with the most site visits	Day of the week	Monday
Most visited site areas	Ordered from most to least visited	Home page, thematic areas, member area, services, who we are, search, towards Stockholm, sustainable development, events, employment
Posting of curricula and personnel requests in 8 months	Number of postings	317
Active virtual forums	Number	24
Active discussion lists	Number	11
Other Web sites designed by RDS	Number	22
Events disseminated through discussion lists	Number	722

RDS Honduras 1999 – Web sites hosted at RDS			
Organization		**Themes**	
Sites	**Number**	**Sites**	**Number**
Government	20	Socio-cultural	34
NGOs	32	Environment	13
Academic	7	Economy	5
Research Centers	4	Politics	11
TOTAL	**63**		**63**

RDS Honduras 1999 – Databases hosted at the RDS servers	
RDS mebership directory	Web search .hn
National NGOs directory	National publications
Civil society organizations directory organized by thematic areas	Documents repository by thematic areas
Biodiversity database	Database on national consultants
Proposals for Reconstruction	Legislation on citizens' participation
Information about the Mitch Emergency	Events
Employment	

RDS Honduras 1999 – General administrative and financial information	
	Notes
1998 audit	Income Lp 1,828,006.63 Expenses Lp 874,241.93 Balance Lp 953,824.70
Incorporation as a non-profit organization	Number 272-98 published in the Official Daily on January 16, 1999
RDS Honduras Internal Labor Regulations	Ministry of Labor Resolution of November 26, 1999
RDS Honduras Council Regulations	Proposed by the Council Assembly
RDS Honduras Policy Statement	Approved by Council
ISP registration at Conatel	Registry number RA0031 Resolution number 969/98 Operator number AA0031 Valid from 10/Dec/1999 to 10/Dec/2004
Connection requisites	In execution
Contract templates for services	Internet services, e-mail services, training, hosting
Building of CEASI (Learning Center on Information Systems)	Full training facility with 10 computers

RDS Honduras 1999 – Income and expenses through 1999		
	Lempiras	**US$**
Income (*)	2,217,609.00	158,400.64
Expenses	1,322,226.69	94,444.76
Balance	895,383.92	63,955.92
(*) Income-generating services: Internet connection, UUCP connection, software installation, Web site hosting, Web site design, training courses, promotion of events, contracts for project execution.		

RDS Honduras 1999 – Project contracts				
#	**Institution**	**Purpose**	**Value in Lp**	**Value in US$**
1.	UAP-CIDA	Production of 4 "Corra la Voz" bulletins	84,000.00	
2.	Arias Foundation / CIPRODEH	Production of site "Consolidation of Citizen's Participation"		$12,328.00
3.	UICN	Population and Environment Network		$ 2,825.00
4.	ASIES-INFODEV	Metadata Project		$ 6,500.00
5.	INFODEM	Escribir Metadatos		$ 5,000.00
6.	FAO / Lempira Sur	GIS database development		$ 5,361.00
7.	PROCAFOR	Development of Forestry Web Site of Honduras		$ 9,000.00
8.	HIVOS	Development of Environmental Alert project		$71,000.00
9.	UAP-ACDI	Training of SERNA personnel in using Internet and e-mail	115,000.00	
10.	UAP-ACDI	Training of SERNA personnel in Web site design and maintenance	45,000.00	
11.	ONEWORLD	Participation in the OW Portal		
12.	CERCA-SISCOM	Cooperation with the "Cumbres para la Gente" regional project		
13.	Peace Corps	A volunteer for six months		

Overview of current activities and prospects

The year of 1999 marks the end of financial support from UNDP and the beginning of RDS Honduras as an independent NGO, called RDS-HN, which defines itself as "an open and democratic space of coordination among social groups, created to facilitate consensus, coordination, information management and exchange for sustainable development."

RDS-HN's primary objective is to facilitate access to relevant information on development in the national context to institutions and the general public through intense use of digital ICTs. The goal is to inform, educate and positively influence decision-making in relation to the instances working for sustainable development in the country.

Although formally incorporated as a non-profit only at the end of 1998, RDS-HN provides since at least 1994 a range of ICT-based services, including: Internet connectivity; design and building of Web sites; training on electronic communication tools; support, technical assistance and consultancy to stakeholders.

The organization has recently moved to new premises with plenty of space to host its team, server rooms, consultants' offices, a telecenter with 20 computers, and a spacious training center with 10 trainee computers and a master computer connected to a digital projector. This is the best multi-purpose telecenter installation among the three projects visited. Connectivity has improved significantly, and today RDS-HN uses a 512 Kb/s link to the Internet.

Beneficiaries of RDS-HN who pay a fee to use its services are called "full members", and their current distribution is as follows:

Member type	***Membership***
National CSOs	126
Government institutions	38
International organizations	20
Private companies	25
Grass roots organizations	3
Academic organizations	8
Consultancy companies	9
Individual consultants	53
Other members	19
Total membership	***301***

Members typically use RDS-HN's Internet services, and some consultants may work also as (volunteer or paid) colaborators of specific projects. One complaint heard from some members is that RDS-HN is not giving them adequate opportunities to participate in the discussion of the NGO's development strategies, particularly when discussing concrete priorities in terms of local projects. They feel they could contribute to a better focus regarding new project initiatives.

The current overall expenses of RDS-HN is about US$120,000 per year. Its income from services is on the average distributed as follows:

Income type	***Value in US$***
Internet services	38,700.00
DNS Services	30,000.00
Telecenter services and training	35,500.00
Web site development	15,000.00
Total	**119,200.00**

This shows an apparent stability between income and expenditures. However, the fact is that several of the income items fluctuate, thus not ensuring an easy break-even, and the NGO cannot just rely on this income for its development prospects.

RDS-HN and the use of open source technology

Thus, RDS-HN is making a consistent effort to develop project proposals and to participate in public tenders to carry out project services for government departments, as well as national and international NGOs.

RDS-HN is active in opening new fronts for sustainability, while making sure its main mission is not in jeopardy. A recent project has been the total revamping of its main portal – now called *Sustainable Development Portal* (*http://portal.rds.org.hn*). The portal has a well organized document storage and retrieval system, making it easy to search for a large number of documents by several metadata. Web site technology is entirely based on open source (PHP and MySQL), although the portal is unfortunately not yet WAI-compliant – which is also the case of the other two SDN projects evaluated.

In addition, the two best designed portals (RDS Colombia and RDS-HN) among the projects evaluated use the same software technologies but are entirely different systems. While RDS Colombia uses APC's *Action Apps*, an open source Web content management and publishing system which could be easily reproduced and adapted, RDS-HN has designed its own publishing system, making use of open source

components available on the Internet or developed locally.

Although the Action Apps still need development regarding its publishing capabilities, it has an important feature which fits well in a network of Internet-based services such as SDN – the embedded ability to establish automatic publishing networks, in which information generated in one site can easily be programmed for publication in any other, at predetermined pages, columns or sections and predetermined dates and times. Since Action Apps is published under GPL, there is no need for an organization to be an APC member to adopt it.

Among the SDN Web site developers, Colnodo is best positioned to provide technical advice on this implementation, which is already available with user interfaces in English, Spanish and a few other idioms.

RDS-HN and new project initiatives

Besides the portal, RDS-HN is actively engaged in developing partnerships with national and international organizations, both at government and private levels. This involves a number of initiatives, including:

- Capacity building of small milk producers to learn how to efficiently produce milk derivatives, to properly follow food safety and environmental standards and to distribute their dairy products directly to the market. This is fully operational and products are already being distributed in some market chains. For this project RDS-HN teamed up with producers' cooperatives and received technical and financial support from USAID. This is part of a new line of work involving agricultural research, technical assistance, and critical monitoring of public policies in agriculture, with the overall focus of assisting small farmers and to disseminate results of experiences.

- Development of a national network of rural telecenters (an "infocenters" network) with the IADB and the national government; this is in the tendering phase and RDS-HN is well positioned to win responsibility to develop the project. This is part of another line of work seeking to contribute to digital inclusion in Honduras.

RDS-HN, through its small staff of 15 people or through associated consultants and colaborators, provides consultancy on ICTs to several organizations, and this is also a source of income for the NGO.

Closing remarks and recommendations

RDS Honduras has developed a strong experience of survival through very tough times, particularly considering it is a young autonomous organization which was created when funds were no longer available as the UNDP project grant ended. Particularly after 1998 it has consolidated itself as a reference on sustainable development and ICTs in Honduras, and its work since then has only improved this standing.

Like in Colombia, the closing of RDS-HN would represent a major social capital loss. Further, the NGO cannot rely on income derived directly from its Internet services, since there is already strong competition from commercial services and the current scale of the operations do not generate enough income to maintain the development of its most important component – the information management, dissemination, facilitation and exchange provided through the portal and through specific projects focusing on assisting small producers and local NGOs, in partnership with government agencies, local associations and international funders.

Finally, portal services by themselves do not generate income. On one hand, information distributed through the portal is free (as it should be), and on the other hand there is very little margin for creating value-added information services which could generate significant income.

RDS-HN can only survive the hard way typical of most NGOs today: a correct mix of projects funded by international agencies' grants which would generate enough income to cover part of its operations and fund its information services, and local or regional consultancy work in its fields of expertise.

Nicaragua

Data	*Value*	*Year*	*Obs*
Population (millions)	5.2	2001	
GDP (US$ billions)	2.6	2001	
GDP per capita (PPP US$)	2366	2000	
Poverty level (%)	17	2001	people living below US$1 a day
Adult literacy (%)	67	2001	
Urban population (%)	57	2001	
Telephone main lines	31	2001	per thousand people
Cellular phones	18	2001	per thousand people
Personal computers	8.9	2000	per thousand people
Networked PCs (%)	n/d		
Computers installed in education (thousands)	n/d		
Internet hosts	0.4	2002	per thousand people
Internet users (%)	1.0	2002	
Cost of 512 Kb/s leased line (US$)	2800	2002	Dedicated local link to Internet backbone
ICT expenditures (US$ billions)	n/d		
ICT expenditures per capita (US$)	n/d		
UNDP HDI	0.64	2000	UNDP human development index on HDR 2002 (ranked 118th)
UNDP TAI	0.19	2001	UNDP technological achievement index on HDR 2001 (ranked 64th)

Introduction

Lengthy documents have been written by international agencies and the Nicaraguan government over a number of years on strategies to significantly change the situation of poverty and social injustice. Improvements have been slow, and actually in the last two years there has been a stabilization or decline in some social indexes, although UNDP's HDI for the country has slowly improved. The revised poverty reduction strategy document by the government of Nicaragua in association with several international agencies,[9] summarizes the situation:

9 Government of Nicaragua, *A Strengthened Growth and Poverty Reduction Strategy*, July, 2001, p. ix.

> "Nicaragua's severe poverty stems from structural elements, plus a series of traumas in the 1980's caused by mistaken economic policies, and aggravated by a civil war. The result was a record bout of hyperinflation, major declines in exports, output, incomes, and national assets, and -- during 1987-1990 -- a virtual economic collapse. By 1990, Nicaraguans had the same per capita income they had in the 1960s; the nation's physical infrastructure was virtually destroyed, and the social fabric that weaves a society together had been torn apart... After a pause, real GDP growth reemerged in 1994 and has accelerated since, in spite of a series of hurricanes, earthquakes, and droughts. Nevertheless, Nicaragua's economy still remains at levels well below those of the late 1970's, and it remains the second poorest country in the hemisphere."

The recent *Human Development Report* for Nicaragua[10] establishes the main agenda for achieving a significant positive change in the situation of sustainable human development in the country, summarized as follows:

- *to stimulate the establishment of an effectively includent democracy* – meaning a democratic practice at the government and other levels with equal participation opportunities for all people;
- *to achieve public and private transparency* – this refers basically to government practices as well as practices of private companies and related institutions; the goal is to guarantee strict observation of legal precepts for business practices, as well as for government procedures and public spending;
- *to establish the mechanisms for effective citizens' participation* – enhacing presence of organized civil society in decision-making and in social control of public policy;
- *to stimulate civic education promoting values such as justice, solidarity, tolerance, respect* – the basis of national mobilization for sustainable development and the struggle against poverty;
- *descentralizing resources and capacities* – to support local initiatives, solidarity economy, community participation;
- *promoting extensive dialogue among Nicaraguans towards building a strategic vision for the country* – involving participation of the media, political leaders, the academic community, CSOs and private companies committed to a socially just environment for development and growth.

In a sentence, this agenda points to building social capital in Nicaragua, a central component for achieving sustainable human development.

Regarding ICTs, the overall situation is similar to Honduras, Nicaragua being listed as having the lowest teledensity in Central America. It also has a very low Internet user density, although Nicaragua has been a pioneer in some fields of Internet technology in the region. Actually, Nicaragua was one of the first countries in Latin America to obtain control of its ccTLD ("ni"), in 1988, and had

10 UNDP, *El Desarrollo Humano en Nicaragua 2000*, Managua: 2000.

one of the first network services providers of the region (Nicarao, which started in 1989, hosted by CRIES, an independent social research NGO). The Nicarao group was one of the founders of the APC in May, 1990.

Recent data show that there are about 20 ISPs serving about 50,000 users, and about 1,800 registered Internet domains.

Project background

Nicaragua was not included in the initial list of 30 pilot projects for launching SDNP. However, UNDP has later decided to include it as part of the SDNP effort. In April, 1994, 27 organizations subscribed the Statement of Principles to form an SDN in the country. The statement set the ambitious goal of making SDN the coordinating entity of all national sustainable development activities through a colaborative work to support communication and information processes using Internet tools.

The network activities supported by the SDN project effectively provided an exchange space for several relevant entities covering government, private sector and CSOs, particularly focused on environmentally-related development issues, including:

- National Biodiversity Commission – CONABIO;
- National Commission on Environmental Education – CNEA;
- Citizen's Forum for Sustainable Development – FCDS;
- Coordination of Environmental Organizations – CONGA;
- National Council for Sustainable Development – CONADES.

In its initial phase (1994-1997) the project sought to implement and develop crucial components to support its commitment as a main sustainable development information dissemination and exchange resource:

- a field research component, to map the real information needs of the participating members to propose an information exchange strategy, as well as to map information sources and corresponding methods;
- an infrastructural component – the Internet services package – to provide advanced and effective information exchange and colaborative work tools;
- a political, regional networking component, to negotiate joint efforts in Central America seeking a common information management, dissemination and exchange strategy.

In 1995, about one year after it started, the project had a small but diversified list

of users of its network services, although at that time it did not yet have a direct, permanent link to the Internet:

CSOs	14
International agencies	1
Media	1
Government agencies	8
Private companies	1
Academic institutions	4
Total	**29**

It is interesting to note that nearly half of its initial users consisted of civil society organizations of several sectors of activity, although another network services project mostly oriented to serve CSOs was already operational in Nicaragua – the Nicarao node of the APC, which was offering network services since 1990.

UNDP has ceased to support the project in June, 1997. The four year effort was left at a crossroads to search for alternatives in order not to abandon an important and unique information support program for sustainable development in Nicaragua.

In anticipation of this situation, and since the project did not have a major local organization (such as an state agency or a university) which could serve as formal institutional umbrella, the project team decided to go for the constitution of an autonomous non-profit organization – a CSO known as *RDS Nicaragua*, which was formally registered in April, 1996. This followed a path similar to the one of RDS Honduras.

At the same time, in order to attempt to create sustaining mechanisms for the project, the team also founded (in December, 1996) a private company to run its Internet services – the *Empresa de Comunicación e Información Electrónica de Nicaragua SDNNIC*. Thus, while the CSO would strive to maintain the original project goals, the company would seek to provide quality paid ICT services to generate income.

At this point, RDS Nicaragua rewrote its objectives as follows:

- to promote sustainable development and to incorporate the Agenda 21 goals through improved and extended access to information and knowledge, as well as through an exchange of experiences on development issues and initiatives;
- to consolidate itself as a facilitator and information coordination tool for the several governmental and civil society's initiatives seeking solutions to

environmental and human development problems;
- to make sure that its membership has access to the best technical means for effective use of ICTs in achieving their goals;
- to promote national, regional and international information exchange seeking to involve all organizations working on development issues;
- to ensure equal opportunities for participation in the network, making sure that there is no social, economic, political, religious, ethnical, gender or sexual preferences' discrimination of any kind;
- to support elaboration of studies and proposals to further develop essential concepts of the environmental and human development problematic;
- to contribute in the definition of a development strategy which may be incorporated into national and sectoral public policy;
- to promote and carry out environmental education as well as social participation, as key components in building environmental management and to raise awareness on environmental issues.

Overview of current activities and prospects

The statutes of RDS Nicaragua make sure that any person, CSO, government organization or private company which accepts its Statement of Principles, and abides by its statutes and regulations, can be a full network member. This actually in theory enables SDNNIC to provide Internet services as a commercial provider, since many companies and individuals will not have difficulty in subscribing to those principles.

The ensemble of all members constitutes the General Assembly, which has authority to appoint the organization's Directive Council (which appoints the national coordinator with executive responsibilities). The following is a list of the current active members:

- Nicaragua's Environmental Movement – MAN;
- Organization for Community Development "Oscar Lino Paz Cubas" - OPRODECO "OLPC";
- Masaya Environmental Network – REMA;
- Environmentalist Youngsters – Ja!;
- "Juguemos" Puppet Theater;
- GIRASOLES Center;
- La Hora de la Naturaleza;
- Nicambiental;
- "María Elena Cuadra" Women's Movement – León Chapter;
- Association of People Returning from Germany – REINA;
- Environment and Development – ADESA;

- Association for Dendroenergy in Nicaragua – PROLEÑA;
- Ministry of the Environment and Natural Resources – MARENA.

In 1998 an effort was made to produce a business plan to cope with the end of support by UNDP and seek sustainability alternatives. Despite its high level of detail, RDS Nicaragua did not find the necessary national or international financial and logistical support to implement it.

Thus, RDS Nicaragua, unlike in Colombia or Honduras, remained a small scale project, dependent upon the extreme dedication of its few cadres to keep relationships and the network going despite financial difficulties. The group is surprisingly active in building and maintaining an extensive range of relationships. Working alliances on strategic issues for sustainable development are active with:

- Center of Constitutional Rights -CDC
- Let Us Make Democracy - HADEMOS
- PROFAMILIA
- Social Action Secretariat - SAS
- National Council for Sustainable Development - CONADES
- Mesoamerican Biological Corridor Project - CBM
- Formulation of the National Biodiversity Strategy Project - ENB
- Socio-Environmental and Forestry Program - POSAF
- National Environmental Information System - SINIA
- Cooperation NGOs Secretariat in Nicaragua

RDS Nicaragua participates also in a number of national and regional coalitions, networks and joint initiatives, aiming at coordinating information dissemination and exchange needs, such as:

- National Environmental Forum
- Mining Alert Network
- National Water Action Committee
- Nincaraguan Network for Democracy and Local Development - RED LOCAL
- National Biodiversity Forum - FOROBIO
- National Support Committee for the Mesoamerican Biological Corridor
- National Voluntary Forestry Certification Initiative
- National Geomatics Committee
- Ecological Agriculture Promotion Group - GPAE
- National Initiative on Population and Environment - POAM
- Coordination for NGOs Working with Children and Youth - CODENI
- Communications Initiative for Sustainable Development
- Central American Communications Initiative for Sustainable Development - ICCADES

- Central American Program "Trees, Forests and rural Communities" - FTTP/FAO
- Central America's Sustainable Development Networks - RDS CA

RDS Nicaragua and Internet services

Given its lack of financial resources, RDS Nicaragua operates its Internet services in very precarious conditions. The extremely high connectivity costs in Nicaragua mean that the project is at pains to cope with monthly payments of more than US$1,000 for a 128 Kb/s dedicated link to the Internet, which is congested most of the time, even with the small number of users (less than 50 regular institutional users of dial-up services). This means more than 25% of the project's monthly budget, which makes it extremely difficult to expand bandwidth.

As a result, many users, while remaining members of the organization, have migrated to commercial providers, thus reducing still further the small income obtained from these services.

The network is operated with no standard provisions for security – simply connecting a computer to the local area network might mean immediate contamination by a virus. The e-mail server has no antivirus protection, thus just forwarding untouched any contaminated attachment. During the visit basic advice was provided on how to install and maintain basic open source antivirus services on the e-mail server.

The project's Web site is not being updated, and does not employ any of the currently used content management or publishing technologies as do RDS Colombia and RDS Honduras. RDS Nicaragua maintains a small telecenter which is seldom used, and its poor connectivity is not attractive to users.

Closing remarks and recommendations

RDS Nicaragua is in a very difficult situation regarding financial support. To keep running at the current level, the team has to seek grants through consultancies and projects which divert precious time from other activities such as maintaining the information system and trying to operate the Internet services more reliably.

The team has revealed a difficulty in establishing longer-lasting partnerships with international funders. A probable cause is the need for expert support in project formulation to suit the requirements of those international agencies.

On the other hand, its role as an information reference and its capacity for political articulation around strategies for sustainable human development in the country mean that the project must continue, and urgently needs support to establish a short-term capacity to obtain resources.

Finally, the disappearance of Nicarao as the only other NGO-oriented Internet services provider leaves RDS Nicaragua as the only trusted alternative for many civil society organizations, while on the other hand providing further arguments for supporting its continuity.