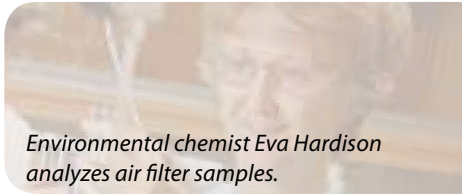






Social scientist Mary Muth informs public policy.



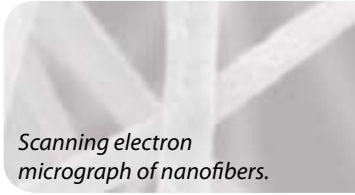
Environmental chemist Eva Hardison analyzes air filter samples.




RTI implements health strategies in developing countries.



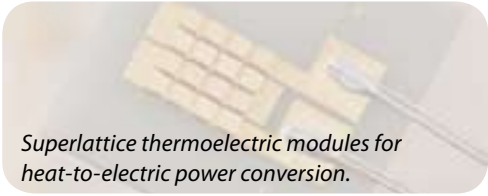
Forensic scientists Meredith Meaders and Dale Hart develop procedures for sample analysis.




Scanning electron micrograph of nanofibers.




Kirsten Rieth and Peter Liao discuss technology transfer.




Superlattice thermoelectric modules for heat-to-electric power conversion.



International development researcher Barbara Kennedy confers with colleagues.



RTI scientists Jerry Rench and Susan Sumner promote public health at a conference in India.

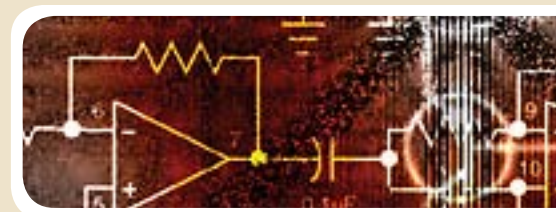


RTI chemist Joyce Shöffner prepares samples for chemical analysis.



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Knowledge and science are one and the same. Through nearly 50 years of experience and objective research, RTI has honed its social, economic, statistical, chemical, biological, environmental, electronic, and engineering knowledge and applied that knowledge to solve problems and generate information that drives decisions, policies, and practices around the globe.





President's Message



As we prepare to celebrate our 50th anniversary as one of the world's leading research and development organizations, I am extremely proud of our work around the globe to improve the human condition. From our social and economic research that informs U.S. public policy to our efforts around the globe to prevent the spread of infectious diseases and promote sustainable economic and social development, RTI is more than ever an organization that is grounded in science and global in reach.

During fiscal year 2007, our scientists continued and expanded their research to assess the health behaviors of U.S. citizens, to help governments better allocate scarce health and education resources, to measure air quality in communities nationwide and around the world, and to strengthen stable democratic institutions in many nations.

This year we also launched a USAID-funded effort to coordinate and monitor the distribution of medicines to treat neglected tropical diseases, and we formed the Research Triangle Energy Consortium (RTEC), a partnership between RTI, the University of North Carolina at Chapel Hill, NC State University, and Duke University. RTEC will focus on solving technical, environmental, economic, societal, and public policy problems related to energy use.

RTI revenues in FY2007 were more than \$612 million, a 12 percent increase over FY2006 revenue. As always, we reinvested net revenues to modernize and improve our facilities and to provide our staff members with the resources they need to excel. Our strong financial position this year allowed us to break ground for a new building, which will be completed in 2008.

As we look ahead to 2008, we do so with pride in our past accomplishments and excitement about the scientific and societal challenges and opportunities that lie ahead. The world around us is ever-changing, and the need for independent, objective research and science-based solutions is essential to address these evolving concerns.

Victoria Franchiter Haynes

President and CEO, RTI International





Health Policy

Given that healthcare costs make up a large and growing share of the U.S. economy, and of state and federal budgets, the need for objective information upon which to base healthcare policy is inarguably critical. Every year, RTI researchers devote themselves to developing this objective information. We aim to support sound decision making not only by federal agencies that develop and implement healthcare programs, but also by insurers, employers, and individuals.

Trusted Advisor to the Centers for Medicare and Medicaid Services

In the years since Congress enacted the Medicare Modernization Act (MMA) of 2003, the Centers for Medicare and Medicaid Services (CMS) have repeatedly turned to RTI for help developing various technical aspects of the policy. Among other things, RTI helped CMS develop parts of the payment algorithms for Medicare Advantage and prescription drug plans, and we identified options for dividing the U.S. into regions that CMS used to implement Medicare's new prescription drug and managed care plan options.

“By looking at who’s enrolling in Medicare plans and where these enrollees are located, we help CMS determine why certain plans offered

under MMA have been most popular,” said project director Leslie Greenwald, Ph.D. “And we establish a baseline for determining whether these successful plans are, in fact, benefiting the people enrolled in them.”

More recently, we have begun efforts to evaluate the impacts of some of the MMA-mandated changes in the program. For example, under a newly awarded project, we will be assessing the effects of the Medicare prescription drug program on people with chronic health conditions. Our goal is to determine how Medicare Part D has affected the healthcare of this costly and vulnerable Medicare population.

RTI has proudly served for years as an advisor to CMS, applying expertise in health economics and health services

research, with a special focus on payment and financing, access and quality of care, cost-effectiveness, and program evaluation. Many RTI researchers have worked on CMS projects for decades, and some worked directly for CMS before joining RTI.

“This gives us a firsthand understanding of the agency’s needs,” explained Greenwald. “We are more familiar with the kinds of data CMS generates than any other research organization, and these are the data we analyze to evaluate their programs and policies.”

While the impact of RTI’s research in support of CMS is most keenly felt here in the U.S., our work also has implications for the wider world.

“Because Medicare is the largest insurer in the world, there is a great deal of international interest in what works and what doesn’t,” said Greenwald. “Other nations may not consider wholesale adoption of Medicare’s market-based model, but they may incorporate selected technical aspects, such as the risk adjustment algorithm developed by RTI staff.”

The Economics of Healthcare

At the heart of every public health decision—be it an individual choice or a federal policy—lie questions of costs and benefits: Is an expensive new treatment worth the price? How much does a specific disease cost an individual, an employer, a nation? What is the best way to finance healthcare? RTI economists answer these types of questions every day.

In FY2007, RTI announced the results of three important economic studies that exemplify our efforts to improve healthcare by providing a sound basis for the allocation of precious healthcare resources.

Blindness and Visual Impairment

In the December 2006 issue of *Archives of Ophthalmology*, RTI published new estimates of the costs of blindness and vision problems, the results of a study conducted on behalf of the Centers for Disease Control and Prevention (CDC). Conditions such as age-related macular degeneration, cataracts, diabetic retinopathy, and glaucoma cost the U.S. economy more than \$35 billion

each year. Close to \$14 billion of these costs are borne by the government.

Study leader David Rein, Ph.D., noted that although screening for and treatment of visual disorders may increase costs, “they also will improve visual outcomes and potentially reduce productivity losses and nursing home placements associated with visual impairment and blindness.”

Mental Illness Among Teenagers

In the January 2007 issue of *The American Journal of Psychiatry*, RTI and Duke University Medical Center researchers revealed that mental health services for teens cost more than \$10 billion each year, a figure that has been vastly underestimated in the past. What’s more, some 70 percent of teens studied did not receive the services they needed. Those who did often received services from schools or other organizations not designed to provide mental health services.

According to RTI economist Alexander Cowell, Ph.D., these results support the need for an integrated system of care so children and adolescents with mental illness can get the help they need. Given that adult psychiatric disorders are often continuations or recurrences of childhood disorders, early treatment for mental illness could significantly improve the long-term health of these children.

Routine Vaccination Programs in Hospitals

With funding from CDC and the Association for Prevention Teaching and Research, RTI examined hospital programs that allow nurses to vaccinate patients at high risk for flu and pneumonia without requiring a physician’s signature. Results of the study, published in the journal *Vaccine*, indicated that these programs are cost-effective.



Alexander Cowell reviews results of RTI's study of the cost of mental health services for teens. RTI performed many such economic analyses in FY2007 to provide a sound basis for allocating healthcare resources.



“Such programs prevent many patients from becoming infected and developing serious complications from influenza and pneumonia,” said lead author Amanda Honeycutt, Ph.D. “These vaccination programs cost the hospital significantly less than the societal costs of influenza and pneumonia.”

Making Health Information Technology Work for Patients and Providers

With the advent of electronic medical records, government agencies, providers, and patients alike hope to realize significant improvements in healthcare by having medical information when and where they need it.

RTI is part of ongoing efforts to establish a nationwide health information network that will offer Americans higher-quality healthcare at lower costs and with fewer inconveniences. In FY2007, we released an assessment of barriers to the exchange of health information and developed requirements for electronic health records to help doctors detect errors and guard against fraud.

Health Information Security and Privacy

Across the nation, physicians, hospitals, and other healthcare providers and organizations are subject to a wide variety of state laws, policies, and business practices that govern the exchange of health information. This widespread variation makes it difficult to share electronic data

while maintaining the privacy and security of that information.

To address this variation, the Agency for Healthcare Research and Quality and the Department of Health and Human Services’ Office of the National Coordinator for Health Information Technology hired RTI to assemble what became known as the Health Information Security and Privacy Collaboration (HISPC). HISPC members, who represent 33 states and Puerto Rico, used RTI’s methodology to assess the variation and develop recommendations for reducing it as a means of facilitating the exchange of health information while still ensuring privacy and security.

In July 2007, RTI published the assessment and recommendations. Common challenges we identified included inconsistencies between state and federal privacy laws, varying application of rules under the Health Insurance Portability and Accountability Act (HIPAA), and a lack of trust between healthcare organizations. Viable solutions include establishing statewide policies for both routine and emergency exchange of information, uniform approaches to obtaining patient permission for disclosure, and legal standards and common methods for controlling access to health information.

“RTI will continue to work with the states as they begin to implement individual state plans,” said Linda



Dimitropoulos, Ph.D., RTI’s project director. “We are also coordinating multi-state work groups tasked with finding ways to securely exchange health data across state borders.”

Models for Gathering Accurate Data

As part of a related project, RTI released recommendations to help clinicians make better and more accurate use of electronic health records. By taking steps such as strengthening audit functions and verifying provider identification, clinicians can reduce the likelihood of inaccurate payments and help prevent fraud.

“Billing errors and fraud are typically detected after payment is made,” said project manager Stephanie Rizk, “which makes dealing with claims very inefficient for both the provider and the payer. “Electronic health records allow for the opportunity to correctly bill from the very beginning, which will help physicians receive accurate payments and, ultimately, will reduce fraud.”

To develop the recommendations, RTI researchers assembled a team of experts from across the country to identify factors that affect the security of electronic health records. We helped establish scenarios relating to improper payment and fraud, determining feasible solutions that would minimize system costs and disruptions in workflow and that would not delay care.

Norma Gavin

An expert in domestic health services takes on an international healthcare crisis.

Norma Gavin, Ph.D., has studied domestic health issues for some 30 years. She has helped inform U.S. health policy—in particular, policies affecting women and children—through research into insurance programs such as Medicaid and assessments of the systems that deliver healthcare to patients and of the treatments they receive.

Today, Gavin leads a project for the National Institute of Child Health and Human Development to advance our understanding of the safety and efficacy of medications used to treat children.

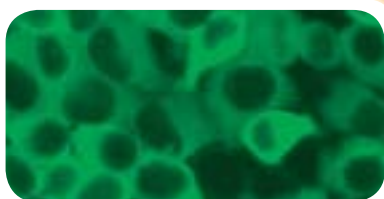
“Clinical drug trials typically don’t include children,” she explained, “but children do get sick and they are treated with drugs. We just use information from adult clinical trials, which doesn’t account for the unique needs of a child’s developing body.”

Working with other economists, as well as statisticians, clinicians, and epidemiologists, Gavin is identifying which medications are most often used by children and what childhood conditions are most often treated with drugs. Future research can then target those conditions that place the burden on our healthcare system.

Gavin noted with hope that this research has the potential to improve the lives of children around the world—a goal she will pursue in her new position as an RTI Senior Fellow. Her motivation: A recent trip to Tanzania.

“I met a mayor whose budget included no funds for the healthcare of his 20,000 citizens,” she said. “And I heard the story of a man whose wife died in childbirth. The needs of mothers and children there for healthcare flew in my face.”

In the years to come, Gavin hopes to find ways in which RTI can make a dent in this great global need by pooling the expertise of a multidisciplinary team of RTI researchers.



Drug Discovery and Development



During fiscal year 2007, RTI began to connect the many pieces of the drug discovery and development spectrum that have been under way at RTI for years. The goal is to make it easier for researchers to collaborate across RTI to take a drug from molecule to market and beyond. A team of cross-institute researchers has been working to identify opportunities for cross-institute collaboration.

Microbicides: Potential Tool for Protection from HIV

One area the RTI team has identified for greater collaboration is microbicide research. Microbicides are a promising potential tool for protecting people from HIV and other sexually transmitted infections. Since 2000, RTI researchers have been involved in a wide range of microbicide research efforts, from working with developers of pharmaceutical products to participating in international and domestic research. RTI researchers have also provided technical support, ethics support, collaboration, and consultation for vaginal microbicide studies. The various types of vaginal microbicides currently

available operate in different ways to block or inactivate the HIV virus. Topical products require a device to deliver the drug intravaginally.

“RTI’s current product development work focuses on vaginal rings and a diaphragm-like device, both of which are being tested as possible delivery vehicles for vaginal microbicides,” explained Cynthia Woodsong, Ph.D., an RTI scientist who has been working on microbicides since 2000. RTI staff are collaborating across research units to bring together international and domestic social science expertise, as well as capabilities in biostatistics and data capture, to support development of these much-needed new technologies to prevent HIV infection in women.

Drug Discovery

While other researchers were working to increase connections across the institute, many RTI researchers focused on projects in their specific area of pharmaceutical research.

For example, Ivy Carroll, Ph.D., led a collaborative enterprise including preclinical and clinical scientists at Emory University, Virginia Commonwealth University, Wayne State University, and Baylor College of Medicine as part of a cooperative agreement with the National Institute on Drug Abuse (NIDA).

Together they developed the indirect dopamine agonist RTI-336 and the kappa opioid receptor antagonist

JDTic as potential pharmacotherapies for treating cocaine addiction and relapse. The Investigational New Drug Application (IND) for phase 1 clinical studies of RTI-336 will be submitted to the FDA early in 2008. The current timeline for JDTic suggests that the IND for phase 1 clinical studies will be submitted in 2009.

Drug Metabolism and Toxicology

Carroll's RTI colleague Jim Mathews, Ph.D., continued work in FY2007 for the National Institute of Neurological Disorders and Stroke (NINDS) to identify drugs that can be used to treat spinal muscular atrophy (SMA). Infants with SMA typically live only two years. No treatment exists. RTI's project is a fast-track effort to come up with the first effective therapies to extend the life of children with SMA.

The goal of NINDS is to submit an IND within the next 12 months. RTI has tested about a dozen drugs, all of which were analogs of indoprofen (an off-the-market pain reliever), in animal models. Mathews and his team are now working with others at RTI to identify new base structures that show promise for treating SMA.

"This is a perfect project for an organization like RTI—finding a drug to treat a devastating disease that affects only a small population," he said. "It fits well with RTI's mission."

Also in FY2007, Mathews and his team began work on a project for the National Toxicology Program

to determine how the body absorbs, metabolizes, and excretes drugs, herbal medicines, and chemicals.

"We generate hundreds of millions of pounds of certain high-production-volume chemicals in this country each year, and we are exposed to them through use in consumer products and through the environment. Workers are exposed to them during industrial production," Mathews said. "Despite this use pattern, we often have little toxicology and metabolic information about these compounds, and we know virtually nothing about the risks associated with exposure to them." Similarly, there is only limited information about the toxicity and adverse drug interactions caused by herbal drugs.

A Treatment for Parkinson's Disease

In other research at RTI, Irma (Gina) Grossi, Ph.D., and Kim Ehman, Ph.D., are developing standardized animal models of Parkinson's disease that can be used to screen

potential neuroprotective compounds before they enter clinical trials. Standardization of these animal models includes development and optimization of neurobehavioural, neurochemical, and immunohistochemical assays to be used for efficacy, pharmacokinetic, and toxicity studies. The goal of this project, which is also funded by NINDS, is to find compounds that protect neurons from degrading without causing any serious side effects.

"Currently available Parkinson's disease therapies focus on treating the symptoms of the disease by restoring the brain's supply of dopamine. Our objective is to evaluate agents that have the potential to slow the progression of the disease," said Ehman. "This is a different approach to the treatment of Parkinson's disease."

Soon the RTI team will begin running up to seven drugs per year through the battery of screening tests they have developed. Many of these drugs are already approved for other uses but have not yet been approved for the treatment of Parkinson's disease.



RTI chemist Scott Watson is one of the researchers developing ways to screen potential compounds for treating Parkinson's disease before the compounds enter clinical trials.



F. Ivy Carroll

Outstanding contributions to medicinal chemistry and substance abuse research garner recognition.

F. Ivy Carroll, Ph.D., RTI Distinguished Fellow in medicinal chemistry and director of RTI's Center for Organic and Medicinal Chemistry, has been honored for his significant achievements many times since he joined RTI in 1960. The past fiscal year was no exception.

In September 2007, Carroll and his former RTI colleague, the late Monroe Wall, Ph.D., were inducted into the American Chemical Society Division of Medicinal Chemistry Hall of Fame for their outstanding contributions to medicinal chemistry. Inductees are members of the ACS Division of Medicinal Chemistry who have made an overall outstanding contribution to medicinal chemistry through a combination of research, teaching, and service.

In October 2006 (FY2007 began in October), Carroll received the 2006 Research Achievement Award in Drug Design and Discovery from the American Association of Pharmaceutical Scientists. He was recognized for the impact and quality of his substance abuse research over a career spanning 30 years.

Among his many achievements, Carroll developed RTI-336 and JDTic, two pharmacotherapies for the treatment of cocaine abuse and the prevention of relapse to cocaine use. Phase 1 clinical studies are planned for RTI-336 early in 2008, with JDTic to follow in 2009. Carroll's earlier research led to the development of iodine-123 RTI-55, which serves as a diagnostic agent for Parkinson's disease as well as a clinical tool to study drug abuse patients. Carroll's work also resulted in the identification of compounds with the potential to treat depression and other neurological disorders.

Carroll has 391 peer-reviewed articles and 30 book chapters published and has completed 34 patents and patent applications in the fields of organic synthesis, medicinal chemistry, pharmacology, biochemistry, and drug abuse research.

As part of this project, RTI chemist Wayne Mascarella, Ph.D., will prepare literature reviews and drug dossiers for each of the drugs being tested at RTI.

New Electronic Data Capture Tool Acquired

In FY2007, RTI invested in an electronic data capture tool, Phase Forward Inc.'s InForm, which can be tailored to meet the specific needs of individual projects. RTI has served as a data coordinating center for many National Institutes of Health (NIH)-sponsored research networks for decades. Since the 1990s, we have been using an internally developed electronic data capture system. The new tool will allow us to continue to offer state-of-the-art data coordination support in an era of evolving regulatory and system security requirements.

During the past year, more than a dozen RTI staff members have been trained to use InForm for site management and the development of forms. We also validated and tested the software, and beginning in early 2008, the Neonatal Research Network, sponsored by NIH, will be the first RTI project to use InForm.

RTI Health Solutions: Acquisitions and New Offices

Another area of research that continued to expand in FY2007 is the work we do for pharmaceutical, biotechnology, and medical device

companies through RTI Health Solutions (RTI-HS). Created in 2001 as a business unit of RTI International, RTI-HS includes professionals with expertise in health economics, psychometrics, patient-reported outcomes, survey research, pricing and reimbursement, clinical research, health preference assessment, drug safety, biostatistics, and epidemiology. RTI-HS has grown steadily since 2001 and in 2007 continued to expand to meet the needs of our clients.

In 2007, RTI-HS enhanced RTI's pricing and reimbursement expertise through the acquisition of Palmer d'Angelo Consulting, Inc., a premier pricing and reimbursement consulting company based in Ottawa, Canada. The acquisition complemented our existing strengths in health economics and outcomes research and built on our pricing and reimbursement capabilities.

In June 2007, we expanded our European operations by opening an RTI-HS office in Barcelona, Spain. Our core research team in Barcelona includes epidemiologists with extensive experience in pharmacoepidemiology, drug safety, pharmacovigilance, and risk management. The addition of the Barcelona office and our new staff further enhances our capabilities to help our biopharmaceutical clients in the successful development and stewardship of their products.

Additionally, RTI-HS opened an office in Ann Arbor, Michigan, and



RTI Health Solutions acquired a premier pricing and reimbursement consulting company in Ottawa, Canada, in FY2007. RTI-HS also opened offices in Barcelona, Spain, and in Ann Arbor, Michigan, this past year.

was joined by research professionals with deep health economics and outcomes research experience. These new staff extend our existing strengths in health economics and health outcomes research, including development and validation of patient-reported outcomes (PRO) instruments, pharmacoeconomic models, incorporation of PRO and health economic endpoints into clinical trials, database research, and regulatory submissions.

Regional Differences in Hypertension Prevalence in U.S. Urban Hispanic Populations

One of the issues addressed by RTI-HS researchers in 2007 was regional differences in the prevalence of hypertension in U.S. urban Hispanic populations. RTI-HS collaborated with Pfizer Inc. to present the results of the study at the 56th Annual Scientific Session of the American College of Cardiology.

The data for this study were collected at a series of community-based health screening programs. The Hispanic

populations in the cities where the study was conducted—Miami, New York, Los Angeles, and Houston—are of different origins. They include people of Cuban, Mexican, Puerto Rican, and South and Central American descent, as well as people from other Hispanic cultures.

Among the findings of this study was that more than one-third of participants had evidence of hypertension. After controlling for a number of factors such as age, gender, health insurance coverage, health screening venue, and urban location, the researchers found that females had a statistically significant lesser likelihood than males of having hypertension.

The researchers concluded that a high prevalence of hypertension exists among Hispanic adults across different U.S. urban communities. The results of this study suggest that further investigation into the reasons for this high prevalence, as well as for the gender differences, of hypertension among Hispanic subpopulations may be warranted.



Global Health

For more than three decades, RTI International has worked to improve health worldwide, implementing health projects in more than 70 countries through collaborative partnerships with local communities, national governments, faith-based organizations, and private-sector counterparts. We apply research findings and practical experiences in developing health service delivery programs to improve the health of millions of people around the globe. During FY2007, we conducted studies and implemented programs to reduce the spread of malaria and debilitating neglected tropical diseases. We also conducted research to reduce HIV/AIDS and began a health governance program in the Philippines to improve healthcare delivery.

Reducing Deaths Caused by Malaria

In support of the President's Malaria Initiative, which seeks to reduce by 50 percent the number of deaths caused by malaria in sub-Saharan Africa, RTI significantly expanded the scope of indoor residual spraying efforts in six African countries, treating more than 683,000 homes and protecting more than 2.5 million people from malaria in Angola, Uganda, Tanzania, Rwanda, Senegal, and Zambia.

In addition, we helped nine other countries in Africa prepare to

initiate or expand indoor residual spraying in the coming year.

The President's Malaria Initiative supports four key interventions, including indoor residual spraying, in which small quantities of insecticide are applied to the inside walls of homes in malaria-endemic areas. The insecticide kills mosquitoes that transmit malaria.

"We are achieving great results with indoor residual spraying," said Gene Brantly, the project's director.

RTI also conducted an economic analysis that found that larvicides, toxins applied to prevent mosquito

breeding in various environments, provide a cost-effective solution to reduce malaria.

The study evaluated the cost of using larvicides in three different African settings and found the annual cost per person protected ranged from \$0.94 to \$2.50, comparable to other malaria vector control methods.

"In some settings, such as highland areas where irrigated crops are grown in valleys, our research shows that larvicides will augment spraying and achieve even greater reductions in malaria transmission," Brantly said.

Strengthening Integrated Vector Management Worldwide

We also continued a project to develop and promote integrated vector management to control vector-borne diseases that are transmitted to humans by an insect or other arthropod. This worldwide program will improve efforts to reduce malaria as well as others diseases, including dengue fever, leishmaniasis, filariasis (elephantiasis), onchocerciasis (river blindness), and chikungunya.

The program is helping countries incorporate environmental management and the use of larvicides into existing malaria control programs, in combination with indoor residual spraying programs and the distribution of insecticide-treated bed nets.

“We are working closely with the World Health Organization to improve countries’ abilities to use integrated vector management, and we look forward to extending our work into Asia and Latin America,” said project director Jacob Williams.

Eradicating Neglected Tropical Diseases

During FY2007, as part of an effort to reduce neglected tropical diseases in developing nations, RTI launched an integrated treatment program to provide safe and effective drugs to about 40 million people annually for five years, targeting countries in Africa, Asia, and Latin America that have a high prevalence of the targeted diseases and have recognized them as a national health priority. It was originally launched in five African countries—Ghana, Niger, Burkina Faso, Mali, and Uganda, where we distributed more than 35 million treatments to more than 13 million people.

The program focuses on mass drug distribution for the control or elimination of five of the most prevalent neglected diseases that can be treated through large-scale integrated mass drug distribution programs—trachoma, soil-transmitted helminthiasis, onchocerciasis, schistosomiasis, and filariasis.

At least 1 billion people—one-sixth of the world’s population—suffer from one or more neglected tropical diseases, which cause severe disability in the world’s poorest countries, resulting in billions of dollars of lost productivity.

The program will be expanded to Haiti, Southern Sudan, and Sierra Leone during FY2008 and several additional countries over the next five years.



Healthcare workers in Ghana distribute medications to members of a rural village to prevent neglected tropical diseases. The mass drug distribution is part of an integrated treatment program launched by RTI during FY2007 in five African countries.



Preventing HIV/AIDS Globally

RTI has been a leader in HIV/AIDS-related research and intervention programs since 1984, both domestically and internationally. We apply research and practical experience to strengthen health policies and design better programs.

Preventing HIV/AIDS Among Women

RTI has developed a best-evidence, woman-focused HIV/AIDS intervention that is organized on the principles of developing personal power by reducing substance abuse, strengthening negotiating skills for sexual protection, and preventing sexual violence.

The program was originally designed to reach substance-abusing African-American women in North

Carolina and, during FY2007, was adapted to help at-risk teenagers and pregnant African-American women in the state. Many of these women face significant health disparities attributable to poverty, unemployment, lack of resources, and lack of access to drug abuse treatment.

Women who use drugs and engage in high-risk sex behaviors are at increased risk for sexually transmitted infections and HIV, and pregnant women who expose an unborn baby to drugs and diseases may affect the health and future well-being of these babies.

While these studies are rooted in North Carolina, adapted interventions now help women around the world reduce at-risk behaviors. Similar interventions are benefiting substance-abusing women in South Africa and female injected-drug users in Russia, and plans are being made to adapt the program for women in India as well.

Preventing HIV/AIDS Among Men

During FY2007, RTI was also involved in a study to reduce HIV/AIDS among men that was selected by *Time Magazine* as the number one medical breakthrough of 2007.

RTI served as the data coordinating center for the randomized trial in Kenya that demonstrated that circumcision of adult men significantly reduces their risk of acquiring HIV through heterosexual intercourse.

“The results of our study clearly demonstrate the impact medical circumcision can have on reducing the spread of HIV infection,” said Corette Parker, DrPH, director of the data coordinating center at RTI. “However, circumcision reduces, but does not eliminate, risk of HIV infection.”

The trial in Kisumu, Kenya, was halted before the designated completion date because of a significantly lower HIV incidence over 24 months in the circumcision group. The research showed a 60 percent reduction in risk of HIV acquisition in circumcised men relative to uncircumcised men.

Models based on the study results suggest that if all men in sub-Saharan Africa were circumcised, as many as 2 million HIV infections could be prevented in the next 10 years. These results, combined with similar findings from a trial in South Africa and one in Uganda, have global health authorities mobilizing to increase access to safe male circumcision services broadly in Africa.



Improving Healthcare Systems in the Philippines

RTI is combining our long history of fostering strong local governments with our expertise in healthcare to help local governments in the Philippines improve healthcare delivery systems in areas such as family planning, maternal and child health, micronutrient supplementation, tuberculosis, HIV/AIDS, and other infectious diseases.

Through the project, known as HealthGov, we are working to ensure that sufficient high-quality services can be provided, managed, and financed by more than 550 local government units in 23 provinces across all three major island groups.

“The HealthGov project is helping local leaders to appreciate the importance of improving health outcomes and to translate this understanding into policy action and additional resources for healthcare,” said Chief of Party Harry Roovers.

During FY2007, we assisted 312 municipalities in reviewing their local health programs and trained 6,445 health workers, local government officials, elected leaders, and non-government organization members on a wide variety of health topics, including health sector reform; planning, financing, and budgeting; resource mobilization; and advocacy.

Lisa Strader, Ty Hartwell

Using expertise in statistics and epidemiology to reduce HIV throughout the world.

For more than 30 years, Tyler D. Hartwell, Ph.D., has worked as an RTI statistician, conducting research in several areas including environmental exposure and multisite epidemiological studies. For the last 20 years, he has focused on many large-scale clinical and behavioral trials in the developing world.

Lisa C. Strader, M.P.H., joined the communicable disease research field more recently, having developed a passion for epidemiology after working in other non-public health professions.

For the past eight years, Hartwell and Strader have worked with a team of researchers to scientifically evaluate the effectiveness of the Community Popular Opinion Leader (C-POL) HIV behavior change intervention model, in which opinion leaders in a community are recruited as behavior change agents to encourage their peers to reduce risk-taking behaviors.

“Because the intervention model is based on social diffusion, it doesn’t require a lot of resources,” Strader said. “This makes it a model that, if successful, could be easily adapted by small NGOs in resource-poor communities because it relies on word of mouth versus other approaches requiring large numbers of staff or other technical resources.”

Working on behalf of the National Institute of Mental Health, RTI served as the coordinating center for the community-randomized controlled Collaborative HIV/STD Prevention Trial. Hartwell, Strader, and the RTI team tested the intervention in China, India, Peru, Russia, and Zimbabwe, in social settings ranging from technical school dormitories to open air markets and street corners.

“The idea is to find a simple intervention that works in countries like India and China where there are billions of people, so that you will have a much greater impact on the HIV epidemic,” Hartwell said.

During FY2007, 10 articles describing the design and implementation of the program were published in a special April supplement of *AIDS*. The hope is that if the results, to be released in spring 2008, show the trial to be successful, the articles can be used to inform others around the world how to replicate the model.

“Because there is not a viable vaccine yet, the only way to stem the HIV epidemic in this generation is to change people’s behavior,” Strader said. “Effective prevention programs exist, but they need to be implemented more broadly.”



Health Behaviors

From biomarkers to economical analysis and survey and statistical research design, researchers at RTI International are developing and implementing novel ways to understand human health behaviors. Understanding these behaviors helps leaders, officials, and policy makers make more informed decisions and implement policies that can improve human health both domestically and internationally. During FY2007, we conducted studies to develop behavioral health programs, evaluate stressors on military health, analyze U.S. drug use trends, assess social and biological effects on health, and examine the health and economic impacts of obesity and smoking.

Understanding the Effects of Social, Biological Factors on Health

Researchers at RTI and the Carolina Population Center based at the University of North Carolina at Chapel Hill are working on a project to understand the relationships between social and biological factors and their effects on health.

In the fourth wave of the National Longitudinal Study of Adolescent Health, the researchers are focused on three health issues that can affect young adults: obesity, chronic stress,

and poor health behaviors. As part of the study, which began in 1994 with more than 20,000 students in grades 7 through 12, the researchers will determine sources of stress and their health consequences for the study cohort, who are now ages 24 to 32. The researchers will also study how genetic and environmental influences affect health and what factors contribute to resilience and wellness.

The study will give policy makers and healthcare providers a better understanding of the relationships between social, environmental,

behavioral, and biological processes and health outcomes in early adulthood, allowing policy makers to make more accurate decisions regarding healthcare.

To better understand the pre-disease pathways in this cohort, we are working with the University of Colorado at Boulder to analyze saliva samples for DNA and with the University of Washington to analyze blood spot samples to study diabetes, cardiovascular health, and Epstein-Barr virus (EBV) antibodies.

Recognizing the Effects of Stress Among Army Families During Deployment

Using our expertise in statistical analysis, researchers at RTI and the University of North Carolina at Chapel Hill School of Public Health conducted a study published in FY2007 that confirmed that incidents of child abuse and neglect among Army families significantly increase when a parent is deployed to a combat zone.

The study, which appeared in the August 1 issue of the *Journal of the American Medical Association*, compared the rates of confirmed incidents of child abuse and neglect among nearly 2,000 Army families when soldiers were deployed versus when they were at home. Researchers found that the overall rate of child abuse and neglect was more than 40 percent higher while a soldier-parent was deployed for a combat tour than when he or she was at home.

Deborah Gibbs worked with researchers at RTI and UNC to determine that incidents of child abuse and neglect among Army families significantly increase when a parent is deployed to a combat zone.



Civilian mothers whose soldier-husbands were deployed showed the greatest increase in the rate of child abuse and neglect during deployment.

The most likely explanation for the increase is that stress created by combat deployment significantly impairs the parents' ability to care for their children appropriately.

"Our study confirms that supportive services are needed for families of deployed soldiers and that those services need to be provided in a way that encourages parents who are having difficulties to take advantage of them," said Deborah Gibbs, the study's lead author.

Gathering Data on Alcohol, Tobacco, and Drug Use

Since 1988, RTI has conducted the largest U.S. survey on illegal drug use, for the Substance Abuse and Mental Health Services Administration.

This annual survey of about 67,500 individuals illustrates significant trends in the use of alcohol, tobacco, and illicit drugs (including nonmedical prescription drug use) and mental health problems.

The National Survey on Drug Use and Health is the major source of information for the nation on the prevalence and consequences of drug use. Government agencies, private organizations, and individual researchers use the survey results to make policy and resource decisions that affect millions of Americans. For example, the U.S. Public Health Service and state substance abuse agencies use the survey results to estimate the need for drug treatment facilities. Other federal, state, and local agencies use the information to design their drug use prevention programs and to monitor drug control strategies.

In the 2006 National Survey on Drug Use and Health, released in 2007, we found that current illicit drug use has declined among the nation's adolescents, but there is a growing misuse of prescription drugs among young adults, due largely to an increase in the nonmedical use of pain relievers.

We also found that more than 30 million adults had at least one major depressive episode in their lifetime.



Kristina Peterson

Partnering with communities to develop effective behavioral health interventions.

With her recent study, an evaluation of Project DIRECT (Diabetes Interventions Reaching and Educating Communities Together), Kristina Peterson, Ph.D., led a team of researchers from RTI in implementing a study of the first comprehensive community-based project in the United States to address the growing burden of diabetes among African Americans.

Peterson collaborated with local community members, state and local governments, and the Centers for Disease Control and Prevention (CDC) in designing and carrying out the evaluation. Combining personal interviews and statistical analysis with active involvement of the community, the research team conducted an extensive evaluation of interventions designed to reduce the burden of diabetes in a North Carolina community.

“We were able to provide information to both the CDC and the community that was not only scientifically sound but was practical and relevant because it was guided in part by the end users. It is that unusual combination that gives our findings the potential to make a difference by strengthening communities’ abilities to fight diabetes,” Peterson said. “When you have a project like this where you are able to give back directly to the community, you can see the impact you can have as a scientist. That is really gratifying.”

Her team’s work earned them the Health Equity Award from CDC for making a significant contribution to advancing minority health programs, research, and surveillance.

Peterson said that the project taught her and her team how people and communities respond to efforts to inform and help them, the barriers people have with responding to new ideas, and the types of programs that help people change their health behaviors. “Through this project we developed a deeper appreciation of what ‘community-based research’ means, which we will all use to guide our future work.”

Communities across North Carolina and as far away as New Zealand are now looking at Project DIRECT as a model for improving health in their communities.

Evaluating the Effects of New York’s Statewide Smoking Ban

RTI has an extensive background in evaluating tobacco control programs throughout the country, and our research has been at the forefront in identifying the health and economic impacts of New York’s smoking regulations.

During FY2007, research by RTI and others revealed that New Yorkers’ exposure to secondhand smoke has been reduced by half since the state implemented the 2003 Clean Indoor Air Act, which banned smoking from all indoor areas.

“No previous study has assessed changes in biological markers of secondhand smoke exposure in the general population of nonsmokers after the implementation of a comprehensive statewide smoke-free air law,” said Matthew Farrelly, Ph.D., co-author of the report.

In a related study, researchers at RTI and the New York State Department of Health found that those reductions in exposure to secondhand smoke also resulted in a significant decrease in heart disease, specifically heart attacks, across the state.

The researchers found that New York hospital admissions for heart attacks in 2004 were 8 percent lower than

would have been expected had the Clean Indoor Air Act not been enacted. That reduction is equivalent to almost 4,000 fewer hospital admissions and an estimated cost savings of \$56 million.

Using Financial Incentives to Reduce Obesity

RTI is a leader in assessing the economics of obesity, conducting economic evaluations and survey research to assess the effectiveness and cost-effectiveness of interventions. Our obesity research helps decision makers implement policies and programs designed to reduce obesity and related illnesses and costs.

During FY2007, researchers at RTI and the University of North Carolina at Chapel Hill determined that moderate financial incentives can promote employee weight loss.

Two hundred participants were randomly assigned to receive either no money, \$7 per percentage point of weight lost, or \$14 per percentage point of weight lost during a three-month period.

The researchers found that the larger financial incentive resulted in the greatest short-term weight loss. In three months, participants who received \$14 per percentage point of weight lost lowered their weight by nearly five pounds.

A previous RTI study found the annual costs of obesity-attributable medical expenses and absenteeism range from \$400 to more than \$2,000 per obese employee, suggesting that modest financial incentives may reduce weight and, if sustainable, may improve the financial health of the company.

“Financial incentives tied directly to weight loss are an attractive strategy from an employer’s perspective because they require no start-up costs and employees receive the incentive only if they achieve the targeted weight loss goal,” said Eric Finkelstein, Ph.D., the study’s lead author.





Energy and the Environment



In the lab and in the field, researchers at RTI International work every day to assess, protect, and restore our environment. Projects highlighted this year emphasize the range of our efforts, including both local and nationwide environmental monitoring, as well as development of energy technologies that could one day reduce, or perhaps eliminate, hazardous emissions from power plants in the U.S. and abroad.

Engineering Solutions to Climate Change

Within the scientific community, there is little doubt that climate change and energy use are directly linked. At RTI, what may be our most significant contributions to the global effort to halt climate change come from our energy technology programs.

In FY2007, with support from the U.S. Department of Energy, RTI reached milestones in the development of technologies to generate electricity and fuel from two abundant domestic resources, coal and cellulosic biomass, while also radically lowering greenhouse gas emissions.

Cleaner Energy from Coal

For six years, RTI has been developing a process designed to offer existing power plants a low-cost option for reducing carbon dioxide emissions. In FY2007, our “dry carbonate” process underwent several months of field testing under actual coal-fired conditions at the U.S. Environmental Protection Agency’s combustion research facility. Results proved that RTI’s process is robust and reliable, capable of removing more than 90 percent of the carbon dioxide in flue gas. Over the next three years, we will work with a number of industrial and governmental partners to scale up development and bring RTI’s process closer to commercial availability.

Under another effort, RTI engineers are developing processes that could enable the power plant of the future to generate electricity from coal with near-zero emissions. Drawing on our years of experience with coal gasification, we worked with researchers at SRI International to identify contaminants that must be removed to make coal-derived syngas suitable for use in solid oxide fuel cells.

These fuel cells can generate electricity directly from the syngas, and the off-gas produced actually facilitates downstream carbon capture, making the fuel cells far more efficient and cleaner than traditional technologies.

In addition to providing clean electricity, coal may be able to meet our nation's needs for natural gas for centuries to come. RTI is developing a process that converts coal into clean, pipeline-quality natural gas—also known as substitute natural gas. The process produces near-zero emissions and a high-pressure carbon dioxide by-product stream ideal for sequestration.

Clean, Renewable Fuel from Biomass

Through the process of gasification, agricultural wastes and other non-food plants—or cellulosic biomass—can provide a renewable source of clean fuels or other chemicals. RTI is developing technologies to remove contaminants from biomass-derived syngas as well as developing catalysts for converting the syngas into transportation fuels.

Working with scientists at Clemson University and Süd-Chemie, we are adapting our proven technology for cleaning coal syngas to remove impurities from biomass-based syngas. Dubbed the Therminator, RTI's technology has proven to be both thermally efficient and clean in bench-scale testing. Our next step and a goal for 2008 is to identify a partner to test the Therminator at the pilot scale.

Ultimately, we will seek to combine our biomass gas cleanup and catalyst technologies into an integrated, pilot-scale demonstration to generate sufficient engineering data to help make our technologies commercially available.

Assessing and Sustaining Coastal Lands and Waterways

At RTI, we take a multidisciplinary approach to watershed research, drawing on staff expertise in water quality management, environmental modeling, geographic information systems, risk assessment,



Environmental scientist Emaly Simone helped prepare the third installment in a series of National Coastal Condition Reports that RTI has produced for EPA. These reports exemplify our ability to help clients assess and control pollution of surface and groundwater.

environmental economics, and environmental statistics. This year, among our many efforts to help clients assess and control water pollution, we are particularly proud of two projects focused on our nation's coastal environments.

Evaluating the Condition of U.S. Estuaries

In collaboration with the U.S. Environmental Protection Agency (EPA), RTI supported efforts to evaluate the environmental health of our nation's estuaries. Our scientists assisted EPA in assessing the environmental condition of 28 estuaries in 18 coastal states and Puerto Rico under EPA's National Estuary Program (NEP). These waterbodies

have been identified as estuaries of national significance because of their unique economic, ecological, recreational, and aesthetic value.

"The economy of many coastal areas is based primarily on the natural beauty and bounty of fish and shellfish resources in our estuaries," said project

leader Patricia Cunningham, Ph.D. "The increasing trend in population growth of coastal communities has created environmental pressures that threaten coastal resources."

Despite those pressures, data collected under EPA's National Coastal Assessment showed that the condition of NEP estuaries was fair.

Working closely with EPA and the 28 NEP offices, RTI presented these and other findings in the National Estuary Program Coastal Condition Report. This report marks the first such assessment of NEP-designated estuaries and the third installment in a series of National Coastal Condition Reports that RTI has produced for EPA since 2000.



Research Triangle Energy Consortium

Founding members: David F. Myers (RTI), Chris Gould (NC State), Lincoln Pratson (Duke), and Douglas Crawford-Brown (UNC)

In September 2007, RTI and three local universities officially launched an effort to capitalize on the substantial capabilities in energy research available in the Research Triangle region of North Carolina. The Research Triangle Energy Consortium (RTEC) merges the expertise of our scientists, engineers, and economists with that of researchers from Duke University, North Carolina State University, and the University of North Carolina at Chapel Hill.

The role of RTEC is to facilitate collaboration among the four member institutions and to promote these capabilities outside the Triangle.

“Put simply, we can do things together that we cannot do individually,” said David Myers, Ph.D., vice president of engineering and technology at RTI. “RTI and the Triangle universities are recognized as having strong programs in energy research. With the launch of RTEC, we can now become more than the sum of our parts and be far more prominent in energy research and energy policy.”

Already, through the initial phases of formalizing this new mechanism for collaboration, RTEC has succeeded in raising awareness among its members of the breadth of their research capabilities, interests, and aspirations.

“This understanding alone will enable us to more effectively develop joint proposals to bring large-scale energy research projects to our area,” said Myers.

In the coming year, RTEC will do more to expand this awareness and understanding. Efforts will include a symposium on sustainable energy as well as meetings that focus on more specific energy topics. Ultimately, by combining its members’ strengths in energy research, RTEC seeks to have a major impact on solving the most complex energy problems that face our nation and our world.

Sustaining Natural Resources for Military Training

RTI is also leading a collaborative effort funded by the U.S. Department of Defense (DOD) Strategic Environmental Research and Development Program, involving environmental experts from seven Southeastern universities, two federal agencies, and three private research organizations to help sustain and enhance coastal lands owned by DOD.

Known as the Defense Coastal/ Estuarine Research Program (DCERP), the effort aims to understand coastal and estuarine ecological systems at Marine Corps Base Camp Lejeune within the context of a military training environment. The RTI-led team is studying several different ecosystems on the military base, including the New River estuary, associated coastal wetlands, coastal barrier islands, and terrestrial uplands.

In the coming years, DCERP data will be used to evaluate the effects of environmental stressors—such as residential and commercial development, runoff from upstream areas, and military training activities, as well as impacts from sea level rise, drought, and hurricanes.

Information on these stressors and their impacts on ecological systems will help the team develop new models and management tools for use by Camp Lejeune’s natural resource managers. DCERP will also provide a greater understanding of the biologically diverse ecosystems of the

New River estuary, and its findings will likely be transferable to ecologically similar coastal areas across the country.

Monitoring Our Nation's Air Quality

For nearly a decade, RTI has helped EPA monitor the quality of our nation's air to ensure it meets standards established to protect human health and the environment from fine particulate matter. Known as PM_{2.5}, these particles are less than 2.5 microns in diameter, enabling them to penetrate deep in the lungs, where they can cause or exacerbate a number of serious respiratory and heart problems. Fine particle pollution can also damage farm crops and forests, increase the acidity of lakes and streams, and impair visibility in cities, national parks, and wilderness areas.

Since 1999, RTI has served as the sole contractor for the chemical speciation of PM_{2.5} gathered by EPA's nationwide monitoring network. In this role, we test filters from 180 sites to determine the total mass of PM_{2.5}. We also identify the chemicals and elements present—such as sulfates, nitrates, and carbon—as well as 48 different metals.

To manage the immense quantity of data generated, RTI developed a comprehensive database that feeds information to EPA's publicly available Air Quality System database.

"Among other applications, these data are used in source apportionment and air quality modeling," explained



RTI researcher Jeff Nichols places a filter in an air quality sampler. This new equipment extends our capabilities in monitoring particle pollution, enabling RTI to support EPA's planned network for measuring coarse particulates across the nation.

R.K.M. Jayanty, Ph.D., RTI Senior Fellow. "Our data can also be correlated with hospital and other health data to help researchers understand the relationship between air quality and health problems such as asthma."

Because of our long-established capabilities and specialized laboratories, state and local environmental agencies and the Canadian province of British Columbia have come to RTI for support of their PM_{2.5} monitoring efforts. In FY2007, we began work for the U.S. Army's Center for Health Promotion and Preventive Medicine, analyzing particulate samples collected from 15 sites in the Middle East to help determine what types of particle pollution U.S. military personnel there are exposed to.

We are expanding our research capabilities to include measuring and characterizing coarse particulate matter—particles between 2.5 and 10 microns in diameter—for chemical

and biological contaminants. Like PM_{2.5}, coarse particle pollution may pose serious risks to human health and the environment.

Also in FY2007, we funded our own research into the characterization of chemical and biological components of coarse particles. Subsequently, in partnership with North Carolina State University, we were awarded a grant from the U.S. Department of Agriculture to characterize coarse particulates for chemicals and biological contaminants present at poultry farms. This constitutes the first ever effort to determine the types of chemicals and endotoxins being emitted from such agricultural sources. RTI aims to apply the results of this research in support of EPA's plan to establish a new coarse particle monitoring network with 70 sites around the nation, a project that will further help protect and improve the quality of the air we breathe.



Economic and Social Development



With a dedicated corps of experts in such areas as economics, environmental management and planning, public health, local governance, and urban and financial planning, RTI fosters economic and social development in the U.S. and abroad. By integrating these capabilities, we strive to help the communities where we work make substantial and sustainable improvements. RTI's strengths are exemplified in our portfolio of environmental management projects in China, our support of local governance in Bulgaria, and our efforts to foster social investment in Guatemala.

Supporting Air Quality Management in China

A nation's ability to achieve sustainable social and economic development hinges on its ability to protect the health of its people and its environment. Decisions made by governments and firms regarding programs and infrastructure directly influence land use patterns that, in turn, have immediate and long-term impacts on human and environmental health.

By integrating our expertise in environmental science, engineering, technology, and policy, RTI is able to inform such decisions. This year, among our

many efforts in this area, we have been involved in a series of projects to help China address emerging concerns regarding air quality.

Supporting Efforts to Reduce Refinery Emissions

In late 2006, RTI conducted a workshop for more than 40 Chinese officials, including representatives from provincial environmental protection bureaus, monitoring centers, and large corporations. The training covered general air emission concepts relative to refinery processes, specific models for estimating fugitive emissions from wastewater and storage tanks, and advanced monitoring equipment for detecting leaks.

Feedback from the workshop was excellent. In particular, Shanghai officials indicated their intent to implement the knowledge they gained in ongoing and future audits of emissions at petrochemical facilities. They predicted that Shanghai could one day be viewed as a model city for control of air toxics in China.

Providing Beijing With an Advanced Air Quality Model

In FY2007, RTI researchers developed a state-of-the-art decision support system to help officials in Beijing improve the city's air quality, and they trained 10 representatives of Beijing's Municipal Environmental Protection Bureau in its use.

The system integrates several existing air quality models and incorporates current data on emission sources, weather, and other relevant factors. Using this system, Beijing's environmental managers get a more complete picture of the city's current and forecasted air quality.

Over the long term, the RTI-developed system will support Beijing's goals for improving its air quality, enabling officials to test proposed pollution control measures and compare cost-benefit tradeoffs and environmental impacts before implementing the measures.

Reducing Power Plant Emissions in Shandong Province

Under a contract with the Shandong Environmental Protection Bureau and the U.S. Trade and Development Agency, RTI helped a group of electric utility power plants in Shandong Province select systems for controlling sulfur dioxide emissions.

These efforts will help the province meet new mandates that require all coal-fired power plants to install technologies that remove sulfur and particulates. The goal of these requirements is to improve air quality in Shandong, which ranks highest in China for sulfur dioxide emissions generated by its power plants.

RTI experts evaluated nine power plants to help determine the appropriate design and technology—and the most cost-effective approach—

based on site-specific conditions. We also estimated the environmental impact of the recommended technologies.

This work, said project manager Robert Zerbonia, “will help the plants clean up their emissions more efficiently, benefiting both the power plants themselves and the communities surrounding them.”

Finding Ways to Reduce Methane Emissions

With funding from the U.S. Environmental Protection Agency and the Methane to Markets Partnership, RTI is building capacity in China for reducing methane emissions from the oil and gas sector. We are working with China's University of Petroleum to help identify and evaluate potential

methane reduction projects. In FY2007, we completed our initial task of translating 70 technical documents about methane reduction technologies into Chinese. As the project proceeds, we will provide training on these technologies and help China identify those that are most appropriate for China's natural gas producers.

A Model of Success: Bulgarian Local Government Reform

When the nation of Bulgaria launched its transition to a democratic society in 1989, its towns and cities became the testing ground for democratic governance. Municipal governments assumed increased responsibility for providing public services, stimulating their economies, and embodying the principle of citizen self-government.



Local officials across Bulgaria attended RTI workshops to learn best practices in planning for capital investments. In 2007, RTI ended a very successful decade-long USAID-funded effort to build strong, open local governments in that country.

Under the leadership of Alianzas Chief of Party Tere Ligorria Goicolea, RTI has helped connect Guatemalan schoolchildren to the Internet. Alianzas builds on RTI's experience in developing public-private partnerships to increase social investment.



For the last 10 years of that transition, RTI stood alongside these local governments, providing training and guidance in determining community priorities, developing local budgets, setting fees and tax rates, involving citizens in decision making, providing services that respond to citizens' needs, and more.

In spring 2007, we marked the close of the Local Government Initiative, a project funded by the U.S. Agency for International Development (USAID) to assist Bulgaria in building strong, open, and accountable local governments during its transition to democracy.

"The program was remarkably successful at developing support and empowerment at the local level," said project director Henry Minis.

Since RTI began the project in 1997, the relationship between the central and local governments

in Bulgaria has changed in ways previously unimaginable. Where national ministries once dominated policy making, there is now a dialogue between central and local government supported by one of the strongest networks of local governments in southeastern Europe. We have fostered the health of such associations through guidance in strategic planning, fundraising, media relations, and member services.

The project leaves a rich legacy of strong local governments and institutions that support them and represent their interests. For example, the Effective Solutions Consulting Group, a firm RTI helped establish, will continue to serve local governments across Bulgaria.

Most importantly, Bulgaria's newly capable municipalities will continue to implement good practices, and local and central leaders will maintain open dialogues with one another and with citizens on community issues.

Mobilizing Social Investment in Guatemala

Since 2005, RTI has been working to mobilize the private sector in Guatemala to improve health services, nutrition, and education in that country. Funded by USAID, the Strategic Alliances for Social Investment (Alianzas) project builds on RTI's experience worldwide in developing public-private partnerships to increase social investment.

The Alianzas project is an innovative strategy for funding public projects. The goal is to seize opportunities for development where the interests of the private sector intersect with those of the government and civil society organizations.

Alianzas builds on the growing social responsibility movement among multinational corporations and helps channel resources for, among other things, schools and school supplies, training for teachers and healthcare providers, and health services for women and children.

Under Alianzas, RTI has helped establish alliances with national and international corporations, local foundations, small businesses, faith-based groups, and others to benefit low-income people—particularly those in rural areas. For example, Wal-Mart agreed to sell woven bracelets in all 172 stores throughout Guatemala to benefit victims of



Hurricane Stan, which hit Central America in October of 2005. Proceeds from sales helped rebuild schools, and the weavers—Guatemalans displaced by the hurricane—received payment for their production.

Other successful Alianzas partnerships have brought Internet connectivity and teacher training to rural schools and supported a national campaign to vaccinate some 7 million people in Guatemala against measles and rubella.

As of fall 2007, the project had exceeded its original goal of securing \$2 in cash and in-kind contributions for every \$1 of USAID funding. Of the more than \$19 million in investments to date, 76 percent came from the private sector.

Alianzas has developed more than 70 alliances with partners such as Starbucks, Kraft, Procter & Gamble, Coca-Cola, Fundazúcar, Banco Uno, Cementos Progreso, and Agexport.

Based on the success of Alianzas in Guatemala, the project has been expanded to Nicaragua and El Salvador where, within only a few months of operation, the effort has met with enthusiastic response.

“The possibilities created by this form of social investment are unlimited,” said Tere Ligorria Goicolea, RTI Chief of Party for the project. “We are striving to find programs that aim toward sustainability and local development and that are marked by community participation.”

Jeffrey Petrusa, Michael Gallaher

RTI researchers publish book about the role of innovation in the service sector.

In 2007, RTI proudly announced the release of several books by RTI researchers, including one co-authored by economists Michael Gallaher, Ph.D., and Jeffrey Petrusa with Albert Link, Ph.D., a professor at the University of North Carolina at Greensboro.

Innovation in the U.S. Service Sector explores the role of innovation and the nature of research and development (R&D) in the U.S. service sector and the global economy. It has been described as essential reading for students of business, management, economics, and political science.

Given that the services sector—healthcare, telecommunications, banking, and much more—accounts for the largest and fastest-growing share of the nation's economy, trends in innovation in this sector are an important indicator of our future economic health and competitiveness.

Gallaher and Petrusa found there to be substantial R&D in the service sector, particularly in the areas of information technology. For example, many companies have developed Internet-based services, such as online brokerage sites. These investments have revolutionized the way business is conducted and, more importantly for the U.S. economy, have realized substantial rates of return.

As is often the case for RTI authors, the impetus for writing this book came from an RTI research project.

“The National Science Foundation and the National Institute of Standards and Technology asked RTI to improve a government survey that measures R&D in the U.S. economy,” said Petrusa. “The survey was developed when manufacturing was the dominant sector in our economy and innovation was understood in that context. They needed a way of understanding and measuring R&D in the services sector.”

By publishing their book, Gallaher and Petrusa are extending the potential impact of this research beyond one government survey. With this new understanding of service innovation, decision makers will be better able to foster it—for example, through tax credits and other public policies or company-level business practices.

Gallaher explained, “Innovation typically means that service providers can be more efficient, resulting in lower costs and increased access to services by consumers. Access to improved healthcare services, access to information—these types of things improve people's quality of life.”



Education and Training

Improving education both in the United States and around the world has long been a focus of RTI International. RTI researchers have evaluated teaching strategies, gathered information to inform policy, and provided assistance to developing nations as they work to establish equitable and decentralized education systems. More recently, RTI researchers have been exploring innovative ways to use technology as an educational tool.

Evaluating the Reading Achievement Program

Although most RTI education projects are national or international in scope, occasionally they are carried out much closer to home. For example, this past year, RTI education researchers evaluated a reading program in nearby Durham Public Schools, just down the road from RTI's headquarters in Research Triangle Park, NC.

In evaluating the Hill Center's Reading Achievement Program (RAP) for at-risk students, they found that at-risk elementary students who participated in RAP showed significant improvement both in reading achievement levels and in the

rate at which they learned. RAP was implemented in nine Durham public elementary schools from 2003 to 2006.

"Many of the students involved in RAP were at risk for school failure due to a learning disability as well as other factors, such as low socioeconomic status, low IQ, and previous school failure, such as having repeated a grade," said Jane Downing, Ph.D., RTI project manager for the evaluation.

"We found that while participating in the program, these students progressed either at a rate faster than expected or at the rate expected of an average student for their age, a significant achievement for students who had significant barriers to success."

Funding for the use of RAP in Durham Public Schools was provided by a grant from the North Carolina GlaxoSmithKline Foundation to improve the reading skills of students at risk for not meeting North Carolina state standards for reading proficiency. The foundation also funded RTI's evaluation of the program.

Using Technology to Make Learning Fun

RTI researchers are also collaborating with scientists at UNC-CH's School of Medicine on a project to develop a multimedia presentation and video game that will teach middle school students about the effects alcohol has on the brain. The effort is part of

UNC's Brain Explorers program, led by Gary Duncan, M.D., and funded by the National Institute on Alcohol Abuse and Alcoholism. The program's goal is to create a greater sense of awareness of the biological basis of brain function and behavior through a fun science learning experience.

With input from Duncan, the RTI team put together a 15-minute multimedia presentation that describes exactly how different levels of blood alcohol affect neurobiology and driving. Students learn about the central nervous system, including the cortical regions and their functions, neurons and neural transmission, and reaction time circuits. They also learn about the effect alcohol has on the central nervous system.

"Once students have learned this material, the fun begins," said Rob Hubal, Ph.D., a psychologist who is part of RTI's distributed-learning team. "Students get to test their driving skills in a Web-based video game that assumes various levels of blood alcohol."

The game is programmed to change the response time with increasing blood alcohol levels: no alcohol, 0.08 percent (legally drunk), and 0.20 percent (dangerously drunk). The higher the blood alcohol content, the longer it takes to make adjustments while navigating a vehicle around a track. Drivers accumulate points by staying within their lane and avoiding oncoming traffic.



U.S. first lady Laura Bush (far right, sitting) and Indonesia first lady Ibu Ani Yudhoyono (far right, standing) experience "creative and joyful learning" as introduced by RTI's Ibu Silvana Erlina (center, standing).

During the coming year, RTI and UNC researchers will evaluate the effect of the multimedia components and the Web-based simulation experience on students' attitudes and knowledge about drinking and driving.

Managing Basic Education in Indonesia

On the other side of the world, RTI is engaged in an effort to help improve education in Indonesia, where significant reforms have been introduced over the past decade. As part of these reforms, the Indonesian government has delegated responsibility for education to over 400 district governments. Laws and regulations promulgated over the past several years give schools and their communities more responsibility for improving education.

RTI helped Indonesia with its education reform in many ways during FY2007. One RTI project, Managing Basic Education (MBE), is funded by the U.S. Agency for International

Development (USAID). MBE began in 2003 as a pilot project for the Education Initiative, announced by President George W. Bush that same year. The goal of the initiative is to increase the quality and relevance of basic education in Indonesian public, private, religious, and secular schools.

Through MBE, RTI staff worked with Indonesian communities and local governments to improve the efficiency and effectiveness of educational services and to strengthen the involvement of local stakeholders—parents, teachers, community organizations, and local parliaments.

"We helped district officials collect and analyze data that mapped school locations and resources. Officials can use this information to develop equitable funding plans, provide facilities, and deploy teachers," said Stuart Weston, leader of the RTI MBE team. "At the local level, we helped to implement an active approach to teaching and learning, and we worked to increase community participation and improve school management."



Kyle Snow

Advancing our understanding of school readiness and the transition to kindergarten.

Inspired by a simple love for and intellectual interest in babies, Kyle Snow, Ph.D., has spent more than a decade studying young children. Over the course of his career in developmental psychology, he has studied numerous aspects of early child education. Currently, Snow serves as principal investigator for a study that follows a nationally representative cohort of children from the age of 9 months through their entry into kindergarten.

Like so many of our scientists, his professional curiosity and dedication extend well beyond his RTI workday.

This year, Snow's extracurricular efforts included authoring chapters in two volumes on school readiness and serving as co-editor of one of those volumes, *School Readiness & the Transition to Kindergarten in the Era of Accountability*. This book builds on an earlier volume, updating readers on advances in research, such as a better understanding of children's neurological development and challenges faced by English language learners, as well as insights into how social, emotional, and academic skills intersect to affect academic success.

"As a whole, the book reflects just how complex the process of preparing children for school really is. It's a dramatic intersection of many factors, including family relationships, educational policy, culture, quality of curriculum, and teacher quality," said Snow.

While the book is perhaps most useful to other researchers in the field, many of the chapters describe applications relevant to policy making and to real-world educational and social settings. In fact, the strategic use of prekindergarten education to prepare children for school is of considerable interest across the United States.

"When the original volume was released, Head Start was the only prekindergarten program in the nation," said Snow. "Today, many states and cities operate their own pre-K programs, which are increasingly focused on school readiness. We want to make sure they're getting it right."

As a researcher, Snow sees publication as an elemental part of the scientific endeavor. RTI shares this view and is proud to have on staff many scientists like him who contribute their time, energy, and best intellectual efforts to publishing.

By the time MBE concluded in July 2007, project staff had trained 10,000 teachers and other education stakeholders and had reached 140,000 children in 449 schools.

"The approaches we introduced were disseminated further by local governments, reaching a total of 6,000 schools, 100,000 teachers, and 1.25 million students," Weston said.

More Effective Decentralized Education Management and Governance

In 2005, while MBE was still under way, USAID awarded another project to RTI: More Effective Decentralized Education Management and Governance (DBE1). The goal of this project, which runs until 2010 and builds on the experiences of MBE, is to provide technical services and related resources to improve the decentralized management and governance of primary and junior secondary schools in Indonesia.

RTI's team of Indonesian and expatriate advisors is helping local governments improve their management systems, develop and implement more efficient and equitable systems of education finance, enhance community participation in education finance, and strengthen private sector support of education.

RTI is leading the implementation of the school and district management component of the DBE1 program. The

two other components include one led by the Education Development Center, to which RTI is a subcontractor, to help modernize Indonesia's curriculum and teacher training systems. The other component, led by Save the Children, focuses on providing children with an education that is more relevant to the working world.

In the first quarter of FY2007, President Bush and first lady Laura Bush met with students and teachers in Bogor, Indonesia, to observe progress made by DBE1 and MBE.

"It was a great opportunity for our respective teams to demonstrate this successful program to President Bush," said Dan Moulton, leader of RTI's DBE1 team. "USAID's programs have made meaningful contributions to the quality of education in partner districts, schools, and classrooms. The willingness of our Indonesian partners to adopt new approaches has been a key underpinning of our success."

During the first two years of the DBE1 project, RTI helped more than 1,000 schools produce multiyear, multisource school development plans. Initial evaluations show that the planning process has contributed to improvements in teaching in DBE1 schools and to increased community participation in school governance.

"Approximately 1,000 of the DBE1 communities have contributed over \$600,000 in cash and in-kind support to schools in their communities," said

Moulton. "In addition, several local governments and nongovernment institutions have provided their own funds to replicate programs introduced through DBE1 in more than 1,000 additional schools."

Providing Earthquake Recovery Assistance

Accomplishments by RTI's DBE1 staff in FY2007 also included an unplanned task—helping schools recover from an earthquake that hit Central Java in March. The RTI DBE1 team, responding to a request from USAID/Jakarta, used community participation techniques to help the government assess the needs of more than 300 schools. The goal was to make it possible for schools to open less than two months after the earthquake struck, as originally scheduled, using temporary facilities. Working together, the district officials and RTI staff succeeded in making

it possible for children to attend the first day of classes in bamboo shelters. The RTI team and other donors provided access to books and other teaching and learning materials in time for the start of school.

As a result of RTI emergency response to the earthquake recovery efforts, three private-public alliances were formed with Indonesian and international oil companies, resulting in contributions totaling \$1.35 million to reconstruct or rehabilitate 38 schools, including a grant of \$1 million from ConocoPhillips. As part of this program, RTI produced a disaster rehabilitation manual that provides earthquake-proof construction standards and guidance for training school committees to manage rehabilitation grants. The manual will be adopted by the Ministry of National Education to be used nationwide.





Giving Back

Giving back to the communities in which RTI employees live and work is one of the most direct ways RTI works to improve the human condition. We give back through contributions to United Way, through our annual Community Partnerships program, and through individual and group contributions of money and time.

Our United Way campaign in FY2007 was the best in RTI's history: total contributions increased by more than 17 percent, and we were granted an Award of Excellence. The United Way award recognized RTI for the number of staff members who gave at the leadership level, which means they made an annual contribution of \$1,200 or more. During the 2006

campaign, held during the first quarter of FY2007, leadership givers increased 47 percent from the previous year.

"Thanks to the staff's generosity, RTI was able to make an outstanding contribution that will benefit our local communities and United Way agencies," said RTI President Victoria Franchetti Haynes, Ph.D.

Also in 2007, RTI made donations ranging from \$500 to \$10,000 to over 90 local nonprofit organizations through our Community Partnerships program. RTI contributions support delivery of services to people in need or other causes that are consistent with our mission to improve the human condition. Volunteer-driven fundraising activities such as walkathons, races, and activities that support the environment are also eligible. Organizations that receive donations are nominated by RTI staff members who, more often than not, also volunteer their time.

The bulk of the FY2007 Community Partnership donations were made to organizations in the Research Triangle Park area of North Carolina, where over 2,200 of RTI's 2,600

RTI staff members participating in the 2007 Angels Among Us 5K and Family Fun Walk. (Standing, left to right: Andy McDaniel, Dan Pratt, and Robert Hock. Kneeling: Mike and Nicole Clearly with their children.)



employees work. Donations were also made to organizations in other locations where RTI has offices, including Atlanta, GA; Chicago, IL; Hampton, VA; San Francisco, CA; Waltham, MA, and Washington, DC.

In addition, RTI made a donation to two organizations in El Salvador, where one of our six international offices is located. We contributed \$2,500 to *Fundación Hogares Providencia* (a nonprofit organization that promotes and supports special education) and \$2,500 to *Fundación Pro Educación Especial*, or *FUNPRES* (a nonprofit organization that creates educational and social opportunities for homeless, orphaned, and abandoned children). Also in 2007, RTI supported an effort to provide malaria vaccines to youth in South Africa, home to another of our international offices.

RTI also has an international office in Jakarta, Indonesia. When Jakarta experienced floods in February 2007 that left approximately 400,000 people homeless, RTI donated \$5,000 through the U.S. Agency for International Development to help local relief agencies set up soup kitchens and shelters. A month later, when Indonesia was struck by an earthquake, RTI staff delivered sacks of rice to one of the hardest hit areas.

In addition, staff members in RTI's Atlanta office have sponsored a young boy in India through *Children International* for the past four years.



The basic sponsorship donation helps provide necessities for the boy, named Tubai, and his family. For the past few years, staff members in Atlanta have taken their generosity a step further by making supplemental contributions to purchase extras for Tubai's family and community.

Closer to home, RTI is supporting community efforts to find solutions for energy and environmental problems. In FY2007, we began providing funds for green power (renewable energy resources and technologies that provide the highest environmental

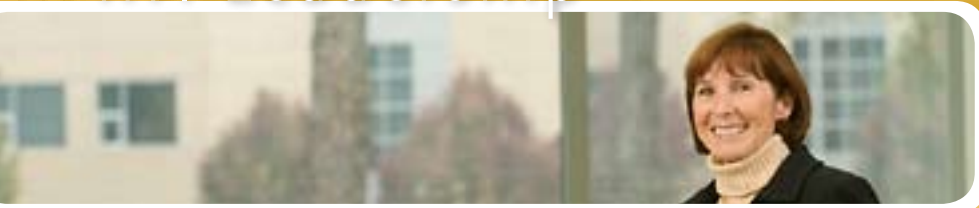
benefits). RTI was one of only two dozen companies contributing \$3,000 or more annually to *NC GreenPower*, a nonprofit organization that seeks to increase the use of renewable energy sources in North Carolina.

And, as always, many RTI staff members donated their own time and money this past year to a broad range of community activities, working in their own way to improve the human condition.



*Children participating in a Durham community work day, which was partially funded by RTI's corporate contribution to *Strong Women Organizing Outrageous Projects (SWOOP)*.*

RTI Leadership



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Victoria Franchetti Haynes, *President and Chief Executive Officer of RTI*

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Lon E. Maggart, *Senior Vice President, Operations*

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- Stephen P. Snyder, *Vice President and Corporate Controller*
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- G. Edward Story, *Vice President, Contracts and Procurement*
- Michael H. Kaelin Jr., *Vice President, Finance*

J. Scott Merrell, *Senior Vice President, Secretary, and Chief Legal Officer*

Lorena K. Clark, *Senior Vice President, Human Resources and Corporate Affairs*

- Sally S. Johnson, *Vice President, Corporate Affairs*

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- E. Wayne Holden, *Acting Unit Vice President, Health, Social, and Economics Research*
- Timothy J. Gabel, *Unit Vice President, Survey and Computing Sciences*
- Sally C. Morton, *Unit Vice President, Statistics and Epidemiology*
- Claude L. Hughes, *Vice President, Molecular Epidemiology, Genomics, Environment, and Health*

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- Lisa J. Gilliland, *Vice President and Chief Operating Officer*
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- Aaron S. Williams, *Vice President, International Business Development*

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- Alan H. Staple, *Unit Vice President, Health Sciences, Biostatistics*
- David F. Myers, *Unit Vice President, Engineering and Technology*
- Samuel S. Field, *Unit Vice President, Digital Solutions*
- Claude L. Hughes, *Unit Vice President, Health Sciences, Chemistry, and Life Sciences*

Allen W. Mangel, *Senior Vice President, RTI Health Solutions*



James J. Gibson and J. Scott Merrell



Lorena K. Clark and Ronald W. Johnson



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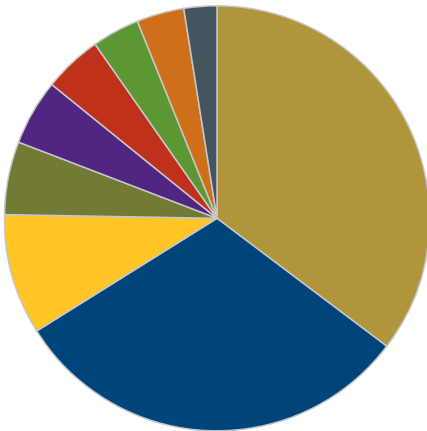
Phail Wynn Jr., President, Durham Technical Community College

Not pictured: Peter M. Scott III

Financials



RTI International enjoyed a successful business year, with annual revenue from contracts and grants totaling \$612.5 million for the fiscal year ending September 30, 2007 (a 12.1% increase). RTI's financial position and outlook remain strong, with equity increasing to \$178.6 million as of September 30, 2007 (a 15.1% increase). RTI received \$781.4 million in new contract and grant funding during FY2007, a 41.5% increase over FY2006 (\$552.1 million). As a nonprofit corporation, RTI invests net revenue in facilities, programs, and capabilities to further our mission of conducting research that improves the human condition by turning knowledge into practice.



Source	Revenue	Percentages
U.S. Agency for International Development	\$216,294,178	35.3%
Department of Health and Human Services	\$189,266,400	30.9%
Commercial	\$56,737,295	9.3%
Department of Defense	\$32,896,815	5.4%
Department of Education	\$31,335,692	5.1%
Other Federal Agencies	\$27,674,915	4.5%
Other Non-Federal	\$22,041,809	3.6%
Environmental Protection Agency	\$21,726,680	3.5%
Department of Justice	\$14,513,619	2.4%
TOTAL	\$612,487,403	100.0%



For the year:	FY 2007	FY 2006
Income Statement (in thousands of dollars)		
Revenue from research operations	\$612,487	\$546,333
Direct and indirect labor	(261,954)	(238,209)
Other direct costs	(252,552)	(222,264)
Other indirect costs	(72,398)	(65,236)
Other income (net of interest expense)	(91)	(803)
Effect of adoption of new accounting principle	(2,034)	0
Net revenue	\$23,458	\$19,821
Balance Sheet (in thousands of dollars)		
Assets		
Current assets	\$195,923	\$168,721
Property and equipment, net	90,728	87,106
Other noncurrent assets	5,768	4,146
Total Assets	\$292,419	\$259,973
Liabilities and Institute Equity		
Current liabilities	\$106,947	\$99,872
Long-term liabilities	6,890	4,977
Total liabilities	113,837	104,849
Contributed equity (unrestricted)	5,061	5,061
Contributed equity (restricted)	2,022	1,865
Accumulated net revenue	171,499	148,198
Total Institute equity	178,582	155,124
Total Liabilities and Institute Equity	\$292,419	\$259,973

Revenue, in Millions	
2007	\$612.5
2006	\$546.3
2005	\$467.7
2004	\$509.5
2003	\$333.3
2002	\$286.3
2001	\$265.0
2000	\$239.1
1999	\$206.6
1998	\$167.9
1997	\$148.2

Staff	
2007	2,678*
2006	2,641
2005	2,557
2004	2,500
2003	2,301
2002	2,066
2001	1,952
2000	1,826
1999	1,738
1998	1,586
1997	1,481

*In addition to its regular staff members, RTI employs about 1,200 term employees who support international projects in more than 40 countries around the world.



Client List

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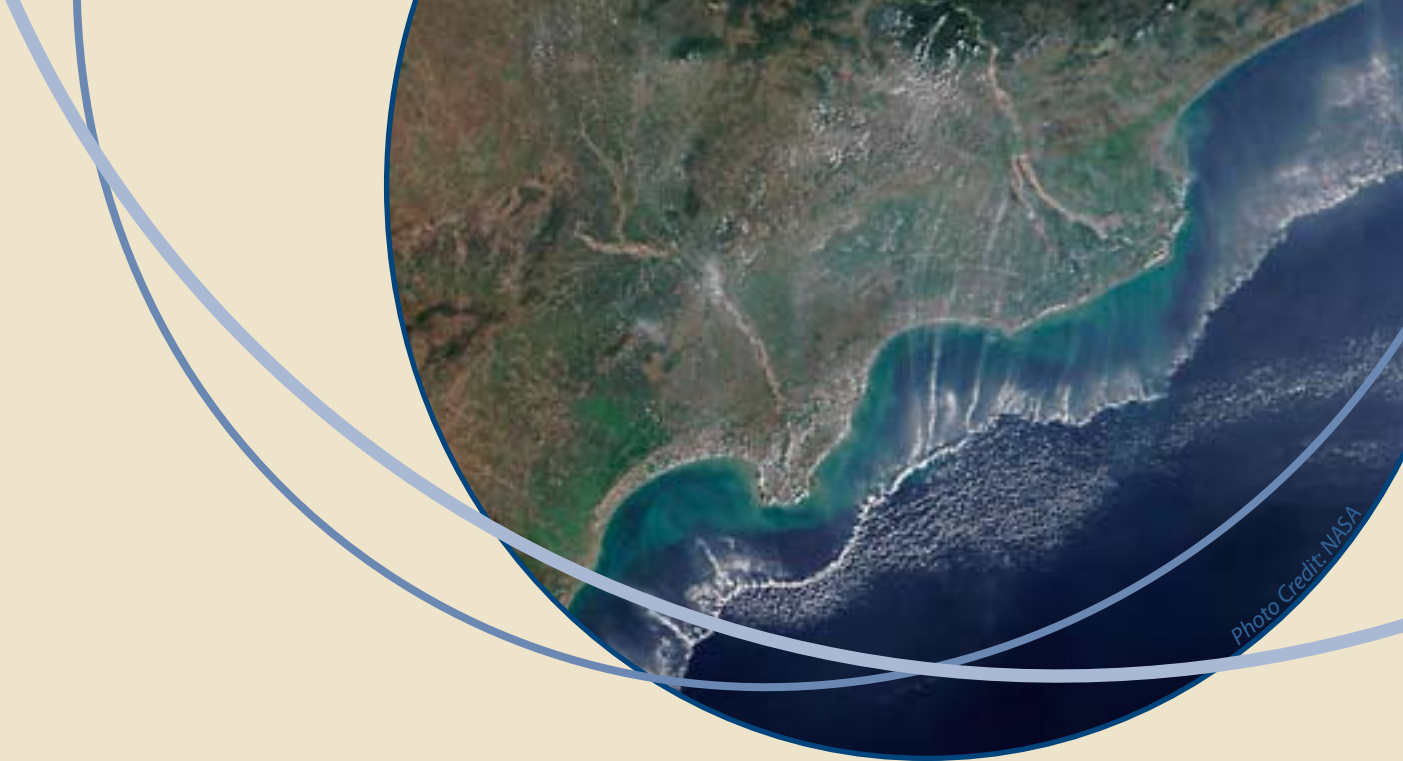
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World Health Organization



RTI International is one of the world's leading research institutes, dedicated to improving the human condition by turning knowledge into practice. With projects in more than 40 countries and a staff of more than 2,600, RTI offers innovative research and technical solutions to governments and businesses worldwide in the areas of health and pharmaceuticals, education and training, surveys and statistics, advanced technology, democratic governance, economic and social development, energy, and the environment. For more information, visit www.rti.org.

RTI International is a trade name of Research Triangle Institute.



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