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# Integrated Resource Planning: The Case for Exporting Comprehensive Energy Planning to the Developing World

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# Integrated Resource Planning: The Case for Exporting Comprehensive Energy Planning to the Developing World\*

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\* This article was completed in February 1993, but repeated publication delays in finalizing this issue of the *Case Western Reserve Journal of International Law* have prevented dissemination until now. Throughout the last year, there have been advances with respect to Integrated Resources Planning ("IRP") and energy development in the United States, and in many of the nations discussed herein. As a result, some of the materials cited, especially certain facts and figures, need updating. Unfortunately, given the lack of time provided prior to the final publication date, major revisions to this work were not possible.

The authors are hopeful that even in the absence of a revision, this work achieves its main goals: (1) to describe IRP and its advantages as an energy planning and development tool; (2) to provide an overview of energy and environmental concerns in the developing world; (3) to illustrate, through the use of two Eastern European case studies, the potential usefulness of IRP; and (4) to urge institutions such as the World Bank and the U.S. Agency for International Development to take a closer look at IRP, and perhaps incorporate the process into their on-going lending efforts.

The authors gratefully acknowledge the assistance of Steven Johnson, Gerald Brooks, Candace Somers, and Mark Gordon with the preparation of this paper.

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## I. INTRODUCTION

**C**onspicuous by its absence in the international arena of energy planning and environmental compliance is the concept of Integrated Resources Planning ("IRP"). IRP "involves an effort to develop and implement a power resource acquisition strategy at the lowest possible cost,"<sup>1</sup> by considering both supply-side options (new generating plants) and demand-side alternatives to generation (such as conservation and load management) to meet expected demand.

IRP, broadly defined, is the development of demand- and supply-side energy options which result in maximum benefits for consumers, and include analyses of environmental externalities, resources availability, and load forecasting.<sup>2</sup>

As a resource management approach, IRP provides significant advantages in the evaluation and selection of energy development strategies and technologies when compared with traditional and less comprehensive planning techniques. Unlike the more limited planning devices that focus primarily on supply-side options, IRP requires the consideration of all potentially significant factors of an energy strategy.

An IRP evaluation is designed to weigh benefits (including social and economic), costs (including environmental), uncertainty (including scientific, political, and economic), feasible alternatives (including demand- and supply-side options), and new information (allowing greater flexibility over time). Such a comprehensive approach can improve long range decision-making, energy diversification, economic performance, environmental protection, and public satisfaction. It can also help to avoid ill-advised energy and environmental decisions before major financial commitments are made.

IRP has become a watershed regulatory issue in the United States with at least 41 states having already adopted some form of IRP,<sup>3</sup> the remaining nine states presently considering action,<sup>4</sup> and the newly signed Energy Policy Act of 1992<sup>5</sup> explicitly requiring states to consider

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<sup>1</sup> WORLD RESOURCES INSTITUTE, *WORLD RESOURCES 1992-93* 151 (1992).

<sup>2</sup> See generally Cynthia Mitchell, *Integrated Resource Planning Survey, Where the States Stand*, THE ELEC. J., May 1992, at 10; EDISON ELECTRIC INSTITUTE, *INTEGRATED RESOURCE PLANNING IN THE STATES: 1992 SOURCEBOOK* (1992); Jack King, *Regional Integrated Resource Planning: Good Policy, Good Business, Good Sense*, THE ELEC. J., Jan-Feb 1992, at 34; Kiah E. Harris & Alison J. Thimis, *Integrated Resource Planning — An Overview*, CFC POWER REV., July 1992, at 1; WORLD RESOURCES INSTITUTE, *supra* note 1.

<sup>3</sup> Mitchell, *supra* note 2, at 11; EDISON ELECTRIC INSTITUTE, *supra* note 2, at v.

<sup>4</sup> Mitchell, *supra* note 2, at 11.

<sup>5</sup> Energy Policy act of 1992, Pub. L. No. 102-486, § 111, 106 Stat. 2776, 2795-96 (1992).

mandating IRP. Yet, IRP is only at a limited conceptual stage overseas,<sup>6</sup> and is not fully required by international agencies and organizations which provide financial support and guidance to developing nations.<sup>7</sup> What is rapidly becoming the utility equivalent of "apple pie" in the United States, remains "neonatal" in most other parts of the world.

The Herculean task facing those who seek to bring the benefits of IRP to the international arena is education. At the moment, U.S. foreign policy experts, international lending and development organizations, and foreign governments seem largely uninterested in the potential advantages of IRP. Given the practical economic constraints of developing nations, education will not be an easy task. However, even if the effort is only marginally successful, it could have a major impact on the future of energy and environmental planning overseas. Even moderate advances will be a marked improvement over the *status quo*.

With Eastern Europe and the countries of the former Soviet Union undergoing a radical transformation to market economies, and with global development compelling the privatization of the energy industries in Asia, Southeast Asia, Africa, and throughout Central and South America, now is a unique time for the introduction of IRP in many parts of the world.

Without IRP, governments can readily be overtaken by the need for rapid progress, the pressure of limited funds, and public dissatisfaction. Although developing countries often respond to planning and infrastructure requirements imposed by international agencies which provide development funding,<sup>8</sup> most are not likely to trade short-term results, such as new power plants, for long-term investments in IRP regulatory and administrative capabilities.

This article initially focuses on IRP, its advantages, and how it has developed in the United States. Emphasis is given to the fact that utility industry executives, consultants, engineers, attorneys, environmentalists, and elected and appointed officials have begun to rely upon IRP as an umbrella mechanism for addressing many of the difficult issues facing the utility industry today. Such issues include the consideration of environmental costs and effects of power generation;<sup>9</sup> selecting the best approaches for providing power to consumers at the least possible cost;<sup>10</sup>

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<sup>6</sup> WORLD RESOURCES INSTITUTE, *supra* note 1.

<sup>7</sup> See *infra* text accompanying notes 197-233 for discussion on lending by the World Bank and the Agency for International Development.

<sup>8</sup> See EDWARD S. MASON & ROBERT E. ASHER, THE BROOKINGS INSTITUTION, THE WORLD BANK SINCE BRETTON WOODS 424-29 (1973).

<sup>9</sup> See Harris & Thimis, *supra* note 2, at 5; EDISON ELECTRIC INSTITUTE, *supra* note 2, at xix.

<sup>10</sup> See Harris & Thimis, *supra* note 2, at 4-5.

selecting energy conservation programs to reduce energy demand;<sup>11</sup> and determining where electric transmission lines will be placed, and with what precautions for the public.<sup>12</sup>

This article then briefly explores some of the energy and environmental quandaries facing developing nations throughout the world, as population growth continues to explode, privatization proceeds, and environmental problems such as global warming become more recognizable. The conclusion reached is that the application of IRP will require flexibility, depending particularly on the level of infrastructure development and available fuel sources.

By focusing on two Eastern European countries, Hungary and Slovakia, the advantages of IRP for emerging democracies and other developing nations throughout the world is addressed. These countries were chosen because their political, economic, and environmental problems are in many ways representative of problems that will soon be encountered in nations throughout Eastern Europe, Asia, Southeast Asia, and portions of Africa and Central and South America.

The final section of this article explores the potential for tying IRP concepts to the lending qualifications and criteria of certain international agencies — the World Bank and the United States Agency for International Development (“U.S.A.I.D.”). Although each organization presently incorporates IRP-type concepts,<sup>13</sup> neither engages in a comprehensive or uniform approach utilizing IRP.<sup>14</sup>

## II. INTEGRATED RESOURCE PLANNING: A “NEW DEAL” FOR UTILITY PLANNING IN THE UNITED STATES

### A. *What is IRP?*

Like many technical concepts that have become part of the public debate in the United States, IRP connotes different things to different people. The definition can vary significantly among environmentalists, engineers, utility company executives, state and federal regulators, electricity customers, and consumer advocates. In fact, the emphasis often shifts depending on the focus of the proponent.<sup>15</sup>

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<sup>11</sup> *Id.*

<sup>12</sup> See Deborah J. Ross, *EMF and Public Policy: Balancing Interests of Customers, Shareholders, and the Public*, THE ELEC. J., April 1991, at 47 (Concerns about health risks associated with electromagnetic frequencies have focused attention on transmission line siting decisions).

<sup>13</sup> See *infra* text accompanying notes 197-233 for discussion.

<sup>14</sup> *Id.*

<sup>15</sup> The emphasis shifts due to the desire by one group or another to include or exclude various

The definition of IRP utilized in this article is: the development of demand- and supply-side energy options that result in maximum benefits for consumers, including analyses of environmental externalities, resources availability, and load forecasting (a projection of future peak demand and energy use).<sup>16</sup> This broad definition encompasses: (1) demand side management<sup>17</sup> ("DSM") acquisition and implementation techniques; (2) competitive bidding and project pre-approval with respect to selection of new generating options and DSM alternatives; (3) incentives to encourage utility investment in DSM; and (4) incorporation of environmental externalities.<sup>18</sup>

These components are interrelated and dynamic,<sup>19</sup> and the IRP process is intended to be a flexible one permitting the consideration of various relevant alternatives. Load forecasting,<sup>20</sup> supply-side planning,<sup>21</sup> system load shape analysis and objectives, demand-side planning, demand-side risk assessment,<sup>22</sup> and financial and rate analysis are all important

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IRP components. For instance, environmentalists generally wish to include extensive consideration of environmental externalities, while utility company executives may choose to emphasize a particular component of the IRP process, depending on the fuel source they would most like chosen for a new generating plant. State and federal regulators often wish to incorporate all supply and demand considerations but with consumer protection as the paramount goal.

<sup>16</sup> See generally David Donovan & Mark Germer, *Integrated Utility Resource Planning in Practice*, PUB. UTIL. FORT., Aug. 17, 1989, at 15.

<sup>17</sup> Demand side management incorporates the use of various techniques and equipment for constraining the level of electric power demand. See Donovan & Germer, *supra* note 16, at 16. Constraining demand results in a decreased need for new capacity in the future. *Id.*

<sup>18</sup> See Mitchell, *supra* note 2, at 10; EDISON ELECTRIC INSTITUTE, *supra* note 2, at ix-xliv. A more formal definition of IRP (which would apply equally to a regional adoption of IRP) might suggest that the IRP plan:

- (1) *evaluate* a full range of demand- and supply-side resources and actions, including energy conservation; the use, allocation, ownership, or disposition of existing facilities and resources, the construction of new facilities, and the acquisition of new power supplies, including renewable energy resources; and
- (2) *select* the set of resources and actions "which will meet expected future demand of the customers of the operating subsidiaries for electricity at the lowest system-wide cost, balancing the interests of shareholders and such customers."

King, *supra* note 2, at 37.

<sup>19</sup> Harris & Thimis, *supra* note 2, at 4.

<sup>20</sup> Today's state of the art utility forecast is a "combination of econometric and end-use methodologies, which together provide the utility with a much more comprehensive knowledge of its consumers and future growth than before." *Id.*

<sup>21</sup> A study of meeting a system's future load requirements through supply-side measures. Analysis includes: "new construction, purchases, non-utility generation (NUGs), efficiency improvements, repowering, renewables, and reactivation." *Id.*

<sup>22</sup> A demand-side plan includes "conservation, load control (e.g., water heater control, air conditioner cycling), rate measures and efficiency enhancements. The overall objective is to reduce

considerations of IRP.<sup>23</sup> Moreover, many believe that environmental factors ought to be considered as a part of the supply- and demand-side analyses within an IRP.<sup>24</sup> In this way, resources can be assessed and subjected to independent scrutiny<sup>25</sup> to measure the impact on the environment from each resource option.<sup>26</sup>

Once the complex IRP analyses described above are complete, each resource option is reviewed based on cost to the utility, and relative cost to one another.<sup>27</sup> The final step is the selection of the "optimum plan," based on a balancing of the supply- and demand-side resources and options. Ideally, an optimum plan:<sup>28</sup>

- Meets the utility's planning objectives;
- Maintains the reliability of the utility system;
- Provides the least-cost option for consumers;
- Minimizes negative environmental impacts; and
- Is flexible enough to adapt to change and future uncertainty.

Aside from the components which make up the optimum plan, there are a few additional characteristics which, when added, comprise what one author has dubbed a full-featured IRP process. These include:

- Establishing an IRP program by statute,<sup>29</sup> regulation,<sup>30</sup> or case precedent;
- Requiring utilities periodically to submit long-range plans to meet future demand on a least-cost basis;
- Subjecting the IRP to public review, with the regulatory body responsible for approving the plan and the utility responsible for its implementation;
- Coordinating the ratemaking and construction permit processes with

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consumer cost through enhanced efficiency and deferred capacity." *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*

<sup>26</sup> *Id.* at 5.

<sup>27</sup> *Id.*

<sup>28</sup> *Id.* The implementation of this optimum plan may be challenged since an important component of IRP is often judicial review which permits any person aggrieved by an IRP to challenge the process. King, *supra* note 2, at 39.

<sup>29</sup> Fifteen states have adopted some type of IRP legislation. EDISON ELECTRIC INSTITUTE, *supra* note 2, at v. Illinois, for example, has passed legislation requiring utilities to file long-term IRP plans including load forecasting, supply and demand side analysis, and environmental externalities review with the Department of Energy and Natural Resources. See ILL. REV. STAT. ch. 11 para. 8-402 (1992). See also, Donovan & Germer, *supra* note 16, at 15.

<sup>30</sup> Twenty-six states have formal IRP regulations. EDISON ELECTRIC INSTITUTE, *supra* note 2, at v.



- the IRP process; and
- Specifying minimized total utility cost as the primary criterion for evaluating competing resources.<sup>31</sup>

Finally, some have argued that IRP should also grandfather (encompass within the plan's parameters) the recovery of costs associated with purchased power contracts, or operating facilities, established prior to the adoption of IRP.<sup>32</sup> Grandfathering, it is argued, can reduce industry upheaval, uncertainty, and risk by avoiding retroactive penalties.<sup>33</sup>

## B. IRP as a Planning Tool in the United States

### 1. Many States are Adopting IRP

In the United States, IRP has resulted largely from the dissatisfaction associated with the construction of expensive new generating plants. The electric utility industry has been forced to absorb the costs of a series of devastating nuclear construction programs and related shocks,<sup>34</sup> and nuclear power remains extremely controversial because of health and environmental risks. In addition, certain environmental groups feel that coal has become the "dirty" choice because of acid rain and other pollution considerations,<sup>35</sup> while hydropower has become more controversial as environmental concerns surrounding endangered species and water flow have become issues of national legislative debate.<sup>36</sup> As a result, there is now a much greater emphasis on evaluating energy options and alternatives than ever before.

The flexible and comprehensive nature of IRP has made it attractive to many U.S. regulators and utilities.<sup>37</sup> In 1989 only seven states had full-featured IRP, and twenty-five had not implemented an IRP regulatory framework.<sup>38</sup> However, by 1992 fourteen states had achieved full-featured

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<sup>31</sup> See Mitchell, *supra* note 2, at 11, 13.

<sup>32</sup> King, *supra* note 2, at 39.

<sup>33</sup> *Id.*

<sup>34</sup> Donovan & Germer, *supra* note 16, at 15.

<sup>35</sup> See Kirk Victor, *Bad Days for Black Rock*, 21 NAT'L J. 1988, 1988 (1989) (discussing problems facing the coal industry); John A. Gibbons et al., *Strategies for Energy Use*, 261 SCI. AM. 136, 136 (1989).

<sup>36</sup> See *Groups File Suit Against BPA to Save Endangered Threatened Salmon Runs*, UTIL. ENV'T REP., Aug. 7, 1992, at 13; *Fish Pose a Costly Problem*, ENGINEERING NEWS REC., Dec. 21, 1992, at 9. See also, Mary O'Driscoll, *Moler Outlines Comprehensive FERC Agenda*, ENERGY DAILY, Feb. 11, 1993, at 1 (Betsy Moler, head of the FERC, has begun advancing environmental arguments in FERC hydro debates).

<sup>37</sup> See EDISON ELECTRIC INSTITUTE, *supra* note 2.

<sup>38</sup> Mitchell, *supra* note 2, at 11.

IRP status,<sup>39</sup> and only nine of fifty states had made little or no progress in IRP implementation.<sup>40</sup> Moreover, all the remaining states that have yet to adopt some form of IRP regulation are currently considering doing so.<sup>41</sup>

Presently, most states that have adopted IRP have employed something less than full-featured IRP — *e.g.*, DSM oriented policies such as financial incentives to encourage investments in DSM.<sup>42</sup> Many have also incorporated a competitive bidding process and the consideration of environmental externalities into the selection of resource options.<sup>43</sup> Competitive bidding facilitates the identification of economic resource options since the various choices are identified and often compared during the competitive process.<sup>44</sup> Competitive bidding alone, though, does not eliminate the need for the many procedural and substantive components of IRP discussed above.<sup>45</sup>

The consideration of environmental externalities has developed in many states in response to public concerns over environmental issues such as global warming and acid rain, and it is probably the fastest growing (and most controversial) of all IRP developments.<sup>46</sup> The inclusion of environmental externalities is important, in the view of some utility experts, because without adequate planning procedures the effects of plant emissions would not be internalized in plant investment or in operating costs.<sup>47</sup>

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<sup>39</sup> *Id.*

<sup>40</sup> *Id.*

<sup>41</sup> Harris & Thimis, *supra* note 2, at 1.

<sup>42</sup> Mitchell, *supra* note 2, at 13. The use of financial incentives to promote utility investment in DSM reflects the growing recognition that utilities are unlikely to pursue it aggressively unless they are compensated for the net loss in revenues due to lost sales. See UNITED STATES GENERAL ACCOUNTING OFFICE, EFFORTS PROMOTING MORE EFFICIENT ELECTRICITY USE, June 23, 1992, at 3-4 (statement of Jim Wells, Associate Director, Energy Issues, Resources, Community, and Economic Development Division, before the House Environment, Energy, and Natural Resources Subcommittee, Committee on Government Operations); EDISON ELECTRIC INSTITUTE, *supra* note 2, at xiii-xiv. Increasingly, utilities are also seeking opportunities to realize profit from management efforts. Mitchell, *supra* note 2, at 13-14. "A fundamental premise of IRP has been that DSM represents both a cost-effective and underutilized resource alternative. Thus, implementation of utility sponsored DSM has often been viewed as one of the primary outcomes of a successful IRP process." *Id.* at 13.

<sup>43</sup> *Id.* at 14; EDISON ELECTRIC INSTITUTE, *supra* note 2, at xix-xx, xxviii.

<sup>44</sup> Mitchell, *supra* note 2, at 14.

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> *Id.* See, EDISON ELECTRIC INSTITUTE, *supra* note 2, at xix.

## 2. Federally Mandated IRP

At the federal level there traditionally has been very little activity with respect to IRP. However, the Energy Policy Act of 1992, signed into law by President Bush in late October 1992, does encourage IRP.<sup>48</sup> Section 111 requires each state public utility commission to consider whether to mandate that each electric utility subject to its jurisdiction employ IRP.<sup>49</sup> In addition, utilities not subject to state regulation must also consider whether to perform IRP.<sup>50</sup>

The Energy Policy Act includes a definition of IRP which establishes that, in the case of an electric utility, IRP is:

a planning and selection process for new energy resources that evaluates the full range of alternatives, including new generating capacity, power purchases, energy conservation and efficiency, cogeneration and district heating and cooling applications, and renewable energy resources, in order to provide adequate and reliable service to its electric customers at the lowest system cost. The process shall take into account necessary features for system operation, such as diversity, reliability, dispatchability, and other factors of risk; shall take into account the ability to verify energy savings achieved through energy conservation and efficiency and the projected durability of such savings measured over time; and shall treat demand and supply resources on a consistent and integrated basis.<sup>51</sup>

Although IRP is becoming more prevalent throughout the United States, it can readily be anticipated that the Energy Policy Act will give its adoption an added boost.

## 3. Regional IRP — A New and Promising Concept

Regional IRP is designed to provide the same coordinated and comprehensive planning discussed above, but for utilities serving relatively large geographic areas with service territories in more than one state.<sup>52</sup> The additional advantage of cooperation among regulatory authorities may be significant for multistate operating companies,<sup>53</sup> given the nature of

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<sup>48</sup> See Energy Policy Act of 1992, Pub. L. No. 102-486, § 111, 106 Stat. 2776, 2795-96 (1992).

<sup>49</sup> *Id.*

<sup>50</sup> *Id.*

<sup>51</sup> *Id.* at § 111(d)(19).

<sup>52</sup> See King, *supra* note 2, at 1.

<sup>53</sup> In the United States, such utility companies generally are registered public utility holding

the American regulatory and legal hierarchy.<sup>54</sup>

Regional IRP is a novel concept, and has not yet been embraced by many utility executives and regulatory bodies in the United States. However, some feel that regional IRP will obtain a more significant following in the next few years, and it may well be taken up in the next legislative session of the United States Congress.<sup>55</sup>

The advantages of regional IRP are apparent. A company that is subject to the review of more than one regulatory body, especially one subjected to overlapping jurisdictions (at the state and federal level), can appreciate a single comprehensive planning process where it can receive up-front review of resource plans. In fact, a number of utility companies, as well as state regulatory bodies, in the United States favor binding front-end review and decisionmaking on a number of elements of the resource selection process, including:

- Assignment of risks between customers and shareholders;
- Allocation of costs among operating subsidiaries where applicable; and
- Designation and approval of specific actions to be taken by each operating subsidiary, each state regulatory commission, and the relevant federal agency, (usually FERC).<sup>56</sup>

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companies under the Public Utility Holding Company Act of 1935, 15 U.S.C. § 79 (1988), amended by 15 U.S.C. § 79 (Supp. III 1991).

<sup>54</sup> The United States has a Federal Energy Regulatory Commission ("FERC") and more than fifty state and local regulatory bodies, such as state Public Utility Commissions ("PUCs"). Similar regulatory structures exist elsewhere in the world, providing support for the idea that regional IRP may be worth exploring overseas.

<sup>55</sup> On April 9, 1992, a regional IRP bill was introduced in the United States Senate, and a hearing was held on May 14, 1992 before the Senate Committee on Energy and the Environment. See 138 CONG. REC. S5219 (daily ed. April 9, 1992). See also *Registered Holding Companies Take Capitol Beating*, ENERGY DAILY, May 15, 1992, at 1. The bill, known as the Energy-City of New Orleans-Arkansas bill, and would have allowed local regulators to join together to develop binding integrated resource plans to meet customer demand at least-cost. *Id.* Reaction to the bill was mixed, and the regional IRP concept did not find its way into the Energy Policy Act of 1992. *Id.* It is possible, however, that similar legislation will be introduced in the future.

In the absence of formal regional IRP regulations, some utility companies in the United States have begun the IRP process on their own. In New England, the New England Electric System ("NEES") and New England regulators have developed practical principles on regional IRP. *Regional Transmission Group Seeks FERC Blessing; IRP Plans Sprout*, INSIDE F.E.R.C., July 6, 1992, at 3. NEES has even proposed its own version of a regional IRP bill, which it circulated on Capitol Hill.

<sup>56</sup> King, *supra* note 2, at 36. Even "sober, business-minded utility holding compan[ies] [believe they] will be better off with a well-designed regional IRP." *Id.* at 34. (Jack King, at the time of his article, was the senior vice-president and system executive in charge of operations for the Entergy Corporation, a registered holding company under PUHCA.)

Another Entergy executive has said:

Regional IRP legislation would, in our estimation, further registered-company

Since no single state authority generally has control over the subject multistate utility, regional IRP requires compromise and cooperation between equally sovereign and at times competing authorities. As a result, both a forum for review of potentially competing IRPs and an enforcement mechanism must exist for regional IRP to be effective. A regional regulatory body and a federal agency are generally the suggested options for a review forum, while enforcement, is often outlined in the plan itself.<sup>57</sup> Inconsistent state commission actions could be challengeable in federal court, while inconsistent company actions could be challengeable before the regional body (if one is created) or before a federal agency.<sup>58</sup> Inconsistent federal agency actions, if any, could then be judicially reviewed.

Some utility holding companies have recognized that there are significant efficiencies to be achieved through planning for an entire system.<sup>59</sup> It is, therefore, likely that regional IRP will continue to attract support within the U.S. energy industry, even though regional IRP efforts to date have not been as readily accepted as single-state IRP programs.

### C. *IRP and Regional IRP can be Helpful Planning Devices*

IRP can provide many benefits to the utility company, as well as to state and federal regulators. Companies benefit because they can receive a form of advance approval for the planning of utility ventures. This enhances the likelihood that the utility companies will recover prudent resource investments, and therefore reduces the risks to all stakeholder groups, including the shareholders.<sup>60</sup> Utilities also are able to make more informed decisions about the building of new generation and transmission capabilities.

State regulators gain because they receive up-front information enabling them to better protect in-state ratepayers. State regulators also benefit because their approval of resource acquisitions by jurisdictional utilities will not be as readily undone by future events or, in the regional

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participation in the competitive markets for supply and demand-side energy service by discouraging parochialism among a region's states and by providing inducements for cooperation among all parties.

*Regional Transmission Group Seeks FERC Blessing*, *supra* note 55, at 3. (quoting Jerry Maulden, group vice-president at Entergy Corporation).

<sup>57</sup> A requirement may exist that the regional IRP provide that a state commission not issue any order inconsistent with, or fail to issue an order required by, an approved regional IRP.

<sup>58</sup> In the United States the usual choice for the federal agency is the FERC.

<sup>59</sup> See King, *supra* note 2, at 34.

<sup>60</sup> *Id.* at 39.

context, by the actions of fellow regulators in neighboring states.<sup>61</sup> Finally, federal regulators benefit because of a reduced caseload and the fact that there are fewer parochial contests over regional resource planning decisions.<sup>62</sup>

Unlike traditional planning approaches, full-featured IRP provides regulatory bodies as well as utilities the ability to: forecast future capacity; evaluate the economic and political feasibility of reliance on various resources and generation/distribution technologies; and assess possible contingencies and reliability problems.<sup>63</sup> IRP can also incorporate the consideration of environmental risks associated with particular generation or distribution choices, thereby permitting more effective environmental cost avoidance and pollution reduction planning.<sup>64</sup>

#### D. *International Adoption of IRP Could Assist with Energy and Environmental Problems Around the Globe*

IRP could provide advantages for the many developing countries throughout the world seeking to reform and modernize their electric power systems.<sup>65</sup> Now is an opportune time to incorporate this planning tool, as a number of countries reformulate their utility infrastructures and energy industries after years of central management and state control.<sup>66</sup>

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<sup>61</sup> By cooperating with other state regulators, regulatory agencies also may be able to limit federal regulatory intervention. *Id.*

<sup>62</sup> *Id.*

<sup>63</sup> See Donovan & Germer, *supra* note 16, at 15. See also *supra* note 2.

<sup>64</sup> See *supra* note 2. With the use of a comprehensive IRP process, utilities are also better able to compete. In the next century, as utilities continue to be pushed into new market niches in order to obtain a competitive advantage over "traditional" generation and transmission companies, IRP will no doubt assist with competitive planning. *Study: 21st Century May See 'Green' Utilities, 'Global' Power Companies*, ELECTRIC UTIL. WK., June 22, 1992, at 2, citing *Electric Power Trends 1992*, a report by the Cambridge Energy Research Associates, Arthur Anderson, and Anderson Consulting.

A number of factors will stimulate new market strategies, including IRP, "a shifting regulatory environment," tighter environmental standards and rules, and "increased competition from unregulated generators." *Id.* It is also possible that in the next century "green utilities" will emerge. *Id.* In fact, some progressive companies are already moving forward with more active and less confrontational positions than have been advanced historically. If this trend continues, such utilities may eventually adopt environmentally responsible policies and programs as competitive assets. *Id.* at 3.

<sup>65</sup> As an example, a preliminary analysis of Thailand using IRP components indicates that the country could significantly reduce its power demand by the year 2000. WORLD RESOURCES INSTITUTE, *supra* note 1.

<sup>66</sup> Most developing nations are not familiar with IRP. WORLD RESOURCES INSTITUTE, *supra* note 1. However, a few nations, including Brazil, Costa Rica, Jamaica, and Thailand, have begun to evaluate and even implement some IRP regulations and policies, indicating that adoption of IRP in developing nations is possible. *Id.* See also Henri-Claude Bailly & Elliot Rose, *The International*

Eastern European nations, in particular Hungary and the newly independent Slovakia, are undergoing a process of social and economic transition and energy revolution,<sup>67</sup> while countries in Asia, Southeast Asia, Africa, and throughout Central and South America also are moving to privatize, expand, and modernize their utility industries.<sup>68</sup> As part of their development, most of these nations will be, or already are, establishing new regulatory authorities, and IRP is a fundamental process that could be implemented to assist with that effort.<sup>69</sup>

Utility company experience in the United States has shown that IRP can increase energy efficiency, lower overall fuel costs, help to conserve scarce resources, and provide environmental protection.<sup>70</sup> Such benefits, in turn, result in better service delivery, or more services at lower cost to the consumer. However, the implementation of IRP, especially in developing countries, requires present sacrifices in exchange for long-term benefits. For developing nations, these sacrifices likely will include significant expenditures of capital for new and more efficient facilities and technology, and to obtain the needed expertise and planning assistance.<sup>71</sup>

A successful IRP program depends on well-organized and competent institutions, coordinated and guided by carefully crafted regulations and laws.<sup>72</sup> Developing a sophisticated decision-making capability is costly,<sup>73</sup> and it can be a significant burden for the inexperienced, understaffed, under-capitalized, and often temporary governments of many developing nations.<sup>74</sup>

Notwithstanding these and other potential obstacles, and the many other priorities which exist for developing nations, consideration should be given to incorporating IRP into energy planning programs. As has been noted above, IRP can lead to reduced consumption of non-renewable

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*Power Market: Myth and Reality*, ELECTRICITY J., Oct. 1992, at 24, 27-28 (discussing the IRP related activities of several countries including Argentina, Korea, Poland, and Hungary); Hyde M. Merrill et al., *Least-cost Planning in Developing Countries*, PUB. UTIL. FORT., Feb. 1, 1993, at 30.

<sup>67</sup> See *infra* text accompanying notes 101-196.

<sup>68</sup> See *infra* text accompanying notes 78-100.

<sup>69</sup> In the United States, state public utility commissions often share regulatory authority over utility planning and operations with the FERC. In other nations there are similar regulatory divisions of authority. IRP and regional IRP could help to coordinate utility planning decisions in these nations, besides alleviating much of the present planning inefficiencies.

<sup>70</sup> See *supra* text accompanying notes 15-33.

<sup>71</sup> Telephone interview with Robert Saunders, Chief of the Energy Development Division, Industry & Energy Department, Office of Sector & Operations Policy, World Bank (Aug. 18, 1992).

<sup>72</sup> *Id.*

<sup>73</sup> *Id.*

<sup>74</sup> *Id.*

energy sources, reduced pollution, increased industrial capacity, and increased savings to the consumer. Effective DSM, which is often a primary focus of IRP, can help countries meet their increasing energy needs with fewer power generating facilities. Funds earmarked for energy-sector investment might thereby be transferred into increasing the efficiency of distribution and transmission systems.

Not only adopting nations will benefit from the introduction of IRP. The United States and other industrialized countries stand to gain as well. As previously noted, IRP can help reduce the domestic environmental degradation which typically accompanies electric power generation, since IRP assists in limiting demand for non-renewable energy supplies.

IRP can also assist in improving international trade relationships by reducing overall energy and environmental compliance costs. At least two positive results occur: (1) the compliant country's wealth is increased, making that country a better trading and investment partner in the long term;<sup>75</sup> and (2) potentially harsh future trade restrictions or sanctions, based on poor environmental compliance records, can be avoided.

If recent U.S. legislative proposals are any indication, international trade is an important consideration, as it will increasingly be linked to the environmental laws and compliance records of competitor nations.<sup>76</sup> Stringent environmental regulations have already irreversibly increased the cost of doing business in industrialized nations, since less developed

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<sup>75</sup> See Foreign Operations, Export Financing, and Related Programs Appropriations Act of 1991, Pub. L. No. 101-513, 104 Stat. 1979, 1993 (1990) (authorizing the expenditure of \$75 million in Eastern Europe "for environment and energy activities, with emphasis on assistance in developing policies encouraging, and providing incentives for, end-use energy efficiency (*including preparation of least-cost energy plans*), conservation, and reliance on renewable energy resources, and further including training, technical assistance for related energy and environmental investments or regulation . . . .") (emphasis added).

<sup>76</sup> United States Senators David L. Boren (D-OK) and Max Baucus (D-MT) are interested in a possible linkage between international environmental law and international trade law. As a result, Senators Boren and Baucus have each introduced their own proposals to partially merge international environmental compliance with international trade competitiveness.

Each proposal could raise the cost of goods imported into the United States, and force nations with lax environmental laws to strengthen them, thereby affecting the siting of production worldwide. Senator Boren's International Pollution Deterrence Act of 1991 makes a country's failure to impose and enforce meaningful pollution controls on its industries a countervailable domestic subsidy under federal law. (S. 984, 103d Sess. (1991)). This initiative has not become law.

Senator Baucus's proposal is to incorporate an Environmental Code into the General Agreements on Tariffs and Trade ("GATT"), whereby duties can be imposed on imports produced in nations with less stringent environmental laws and compliance records than the importing nations. Senator Baucus hopes to prevent the artificial lowering of costs by competitor nations benefitting from lax environmental laws, regulations, and enforcement. *Trade and the Environment: Hearings on S. 984 Before the Subcomm. on International Trade of the Senate Comm. on Finance*, 103d Cong. (1991) (statement of Max Baucus, Chairman, International Trade Subcommittee).



countries produce much more cheaply. However, it is likely that developing nations soon will be forced to deal with trade countermeasures imposed by industrialized nations, either unilaterally or through the General Agreement on Tariffs and Trade ("GATT").<sup>77</sup> If developing nations are able to introduce IRP, whereby stringent environmental protection can be provided at least-cost, then these same developing nations may be able to minimize the harsh impact of potential countermeasures.

### III. THE TIME MAY BE APPROPRIATE FOR IRP THROUGHOUT THE WORLD

#### A. *Population Growth, Energy Shortfalls, and Shifting Energy Priorities are Causing Sweeping Global Changes*

The world is awash in shifting energy and environmental priorities. While the industrialized world grapples to limit global warming and acid rain, the world's less developed nations face the more pressing problems of rapid population growth, the effects of economic development, and the increasing energy demands of both. In fact, population growth and a concomitant need for economic development are likely to play an immediate role in future global energy consumption.<sup>78</sup>

World energy demand, and resulting carbon dioxide emissions, are expected to increase rapidly in the next 30 years, largely because of the continuing population growth in developing nations.<sup>79</sup> It is also likely that population-driven energy demands will outstrip the inadequate power systems of these nations, potentially leading to a stifling of further economic growth and perhaps even social crisis.<sup>80</sup>

Rapid population growth (and the ensuing energy shortages faced by developing nations), the possibility that renewable energy will not be sufficient, and the looming threat of global climate change could result in greater attention to the need for alternatives to fossil fuel — like nuclear

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<sup>77</sup> The GATT, including the detailed commitments on tariffs that comprise the "Tariff Schedules," fills many volumes of treaty text. "GATT is not a single agreement, but is a series of over 100 agreements, protocols," and other items. The GATT generally comprises the basic trade policy commitments of the contracting parties, and is intended to prevent nations from pursuing "beggar-thy-neighbor" trade policies "which would be self defeating if emulated by other nations." JOHN H. JACKSON & WILLIAM J. DAVEY, *INTERNATIONAL ECONOMIC RELATIONS* 296 (2d ed. 1986).

<sup>78</sup> George Lobsenz, *Third World to Set Energy Pattern - EPRI*, *ENERGY DAILY*, Sept. 29, 1992, at 1.

<sup>79</sup> George Lobsenz, *WEC Study: Energy Needs, CO<sup>2</sup> Emissions Set To Rise*, *ENERGY DAILY*, Sept. 23, 1992, at 1.

<sup>80</sup> *Id.*

power.<sup>81</sup>

Although a few Western nations already rely heavily on nuclear power,<sup>82</sup> many developing nations for the first time are seriously considering it as a possible solution for energy shortfalls. Egypt's recent five-year energy plan includes the construction of a nuclear generating station.<sup>83</sup> Nuclear utilities in Russia and the Ukraine also have recently announced plans to build six new nuclear reactors to replace the soon-to-be-closed Chernobyl-style reactors.<sup>84</sup> Romania has begun to produce heavy water for use in its first nuclear reactor, which is expected to come on line in 1994,<sup>85</sup> and the Indonesian government is considering nuclear power as an alternative to an increase in coal use, to meet its surging energy needs.<sup>86</sup>

China is also considering nuclear power, along with other options, as it works to radically revise its energy strategy.<sup>87</sup> In fact, in 1992 China announced a 10-point action plan adopting a strategy of sustainable development, to replace its present model of depletion of natural resources.<sup>88</sup> The plan seeks to encourage energy efficiency and the use of alternative energy sources such as hydro, nuclear, solar, and wind power in response to environmental concerns, particularly global warming.<sup>89</sup> Nevertheless, it is anticipated that to meet increasing energy demand driven by its immense population, China still will need to burn 1.4 billion tons of coal by the year 2000, up 40% from current levels.<sup>90</sup> It is also estimated that coal-fired plants in the year 2000 will still account for 71% to 74.5% of China's generating capacity.<sup>91</sup>

The recent move by developing nations towards nuclear power is merely one of the many trends emerging in this age of limited economic

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<sup>81</sup> Dennis Wamsted, *Blix: Nuclear Power To Benefit From Global Warming Worries*, ENERGY DAILY, Sept. 29, 1992, at 1 ("With each passing year, at least in Europe, public concern about global warming is growing, while, by contrast, concerns about Chernobyl and the threat of another accident are receding." Europeans also remain deeply "concerned about the largely coal-fired air pollution that has damaged forests across the continent.") *Id.* at 2.

<sup>82</sup> France, for instance, gets approximately 70% of its electricity from nuclear power. *Id.*

<sup>83</sup> Dennis Wamsted, *Egypt Tries, Again, To Build Nuclear Plant*, ENERGY DAILY, Sept. 23, 1992, at 2.

<sup>84</sup> Jim Clarke, *Russia, Ukraine Plan Nuclear Spree*, ENERGY DAILY, Sept. 10, 1992, at 1.

<sup>85</sup> *Romania Moves Ahead with Nuclear Plans*, ENERGY DAILY, Aug. 24, 1992, at 3.

<sup>86</sup> Dennis Wamsted, *Indonesia Studies Nuclear Option*, ENERGY DAILY, Sept. 24, 1992, at 4.

<sup>87</sup> *Strategy for Sustainable Development to Trigger New Governmental Policies*, INT'L ENVTL. REP. (BNA), Oct. 7, 1992, at 650.

<sup>88</sup> *Id.*

<sup>89</sup> *Id.* at 651.

<sup>90</sup> *Id.*

<sup>91</sup> *Id.*

resources, increasing population, and environmental concern. It is a trend fraught with potential pitfalls, and which bodes well for the increased consideration of IRP.

Another significant trend is the privatization of domestic energy resources in many countries, and the accompanying influx of capital. As nations throughout the world struggle with capacity shortfalls, and shortages of investment money and credit, privatization efforts are booming.

In India, chronic power shortages and a diminished state treasury have led the government to seek out the private sector to develop at least 11,000 Megawatts (MW) of power over the short-term.<sup>92</sup> However, developer concerns over rates of return and investment security have slowed private developments.<sup>93</sup> Indonesia is also turning to the private sector to meet growing energy demand, particularly since loans for power plant development from the World Bank and the Asian Development Bank have become increasingly difficult to obtain.<sup>94</sup> Thailand,<sup>95</sup> the Philippines,<sup>96</sup> Malaysia,<sup>97</sup> Singapore,<sup>98</sup> New Zealand,<sup>99</sup> and many Central and South American countries<sup>100</sup> are also actively privatizing.

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<sup>92</sup> *Indian Private Power Market Seen at 11,000 MW; Payments a Problem*, INDEPENDENT POWER REP., Sept. 11, 1992, at 10.

<sup>93</sup> *Id.*

<sup>94</sup> *Indonesia Seeks Quick Bids for 370 MW of Private Power for Rhiau Islands*, INDEPENDENT POWER REP., July 17, 1992, at 9.

<sup>95</sup> *Thailand's EGAT Targets Three Large Projects, 2,500 MW for Privatization*, INDEPENDENT POWER REP., Apr. 24, 1992, at 7.

<sup>96</sup> *Philippines Asks International Agencies to Help it Develop Privatization Scheme*, INDEPENDENT POWER REP., Jan. 3, 1992, at 10.

<sup>97</sup> *Malaysia's 5,100 MW State-Owned Utility to be Partially Privatized*, ELECTRIC UTIL. WK., Feb. 17, 1992, at 18.

<sup>98</sup> *Singapore Set to Partially Privatize 4,073-MW State-Owned Electric Utility*, ELECTRIC UTIL. WK., Aug. 31, 1992, at 17.

<sup>99</sup> *New Zealand Privatization Law Clears; First Utility Ready For Sale In Month*, INDEPENDENT POWER REP., July 17, 1992, at 11.

<sup>100</sup> *See, e.g., Venezuelan Privatization Plan Moves Forward; Bids Taken to Study System*, INDEPENDENT POWER REP., July 31, 1992, at 11 (Venezuela is beginning to privatize state-owned utilities); *Study Sees 20,876-MW Private Power Potential in South America by 1999*, INDEPENDENT POWER REP., July 31, 1992, at 11 (private power capacity of South America is increasing); *Honduras Drops Opposition to Private Power, Opens Door to Joint Ventures*, INDEPENDENT POWER REP., July 3, 1992, at 12; *Three Argentine Firms Win Bids for Two Plants Totalling 231 MW in Argentina*, INDEPENDENT POWER REP., Sept. 11, 1992, at 9 (example of utility privatization in Argentina); *Two Argentine Plants Totalling 231 MW Awarded to Three Argentine Companies*, ELECTRIC UTIL. WK., Sept. 21, 1992, at 18; *Argentina Adds two Nuclear Plants, 1000 MW to Broad Privatization Plan*, ELECTRIC UTIL. WK., May 11, 1992, at 8; *U.S. Firms Ink Pact with Guatemalan Utility for Power from 160-MW Plant*, INDEPENDENT POWER REP., March 27, 1992, at 13.

*B. Eastern Europe Case Study — The Energy and Environmental Concerns are Staggering and Must be Addressed*

As the previous discussion has indicated, improvements must be made in energy efficiency and environmental protection worldwide in order to address the growing demand for energy and the problems that demand creates.<sup>101</sup> If the history of the United States is any guide, however, careful planning is crucial before such improvements are pursued.

IRP is a planning technique that may effectively assist developing nations in addressing some of the difficulties they face. As illustrated by the many changes evident all over the globe, and especially by the Eastern European problems discussed herein, past energy policies have not been successful because they too often failed to consider the full range of relevant factors including population growth, future demand, and environmental costs and alternatives. IRP, on the other hand, can provide a thorough and comprehensive treatment for such problems as well as for the variables of scientific uncertainty and shifting trends in public preference.

There is perhaps no better area of the globe about which to hypothesize on the benefits of IRP than Eastern Europe. The lack of cohesive energy planning, the inherent limits of years of Communism, and the devastating environmental aftermath which exists in post-cold war Eastern Europe provide an opportune "testing ground" for the potential usefulness of IRP. For a real world analysis, this section discusses the present situation in Eastern Europe generally and then focuses on the potential application of IRP to Hungary and Slovakia.

1. Energy Policy, Utility Privatization, and Environmental Degradation

The countries of Eastern Europe are quite diverse economically as well as politically.<sup>102</sup> However, all of the emerging democracies have at least one problem in common. Each country must contend with inefficient, energy intensive industries that have caused overwhelming environmental damage throughout the past century.<sup>103</sup>

The environmental conditions in Eastern Europe are severe. In the

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<sup>101</sup> See, e.g., *World Energy Council Shifting Emphasis from Supply to Efficiency Protection*, INT'L ENV'T REP. (BNA), Sept. 23, 1992, at 602.

<sup>102</sup> See, e.g., *Private Power Projects Underway in Eastern Europe; Poland in Lead*, INDEPENDENT POWER REP., June 5, 1992, at 5 [hereinafter *Private Power Projects*].

<sup>103</sup> Hilary F. French, *Eastern Europe's Clean Break with the Past*, THE WORLDWATCH READER ON GLOBAL ENVIRONMENTAL ISSUES 112, 112-114 (Lester R. Brown ed., 1991).

words of Vacslav Havel, the former President of the former Czech and Slovak Federal Republic ("CSFR") and the President of the Czech Republic:

We have laid to waste our soils and rivers and the forests that our forefathers bequeathed to us. We have the worst environment in the whole of Europe, and there are probably many who, when they look at the statistics and, in fact, the very compelling pictures in the recent National Geographic, would say probably the worst environment in the world.<sup>104</sup>

The effects of these conditions are not surprising. For example, the life expectancy in industrialized areas is much lower than in the non-industrialized regions,<sup>105</sup> and the incidence of respiratory disease and mental retardation have increased dramatically over the past ten years.<sup>106</sup>

Energy production and use have contributed heavily to what is now perceived by many as an environmental wasteland. Eastern European industry contributes only one-third to Europe's industrial output, yet it accounts for two-thirds of the sulfur dioxide emissions, which are the principle cause of acid rain.<sup>107</sup> Per unit of economic output, sulfur dioxide emissions are five times the United States levels.<sup>108</sup>

Eastern Europe's energy and environmental problems are part of the legacy of many years of non-democratic and centrally-planned government.<sup>109</sup> State-owned companies emphasized production targets with complete disregard for the efficient use of raw materials, energy, and labor.<sup>110</sup> Within these economies, development strategies focused on production at any cost to meet the "state plan's" objective, without regard for energy consumption and environmental consequences.<sup>111</sup> Each Eastern

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<sup>104</sup> *Eastern Europe Environmental and Energy Issues: Hearing Before the Subcomm. on European Affairs of the Senate Comm. on Foreign Relations*, 102d Cong., 1st Sess. 3 (1992) (statement of Dr. Carol C. Adelman, Assistant Administrator, A.I.D.) [hereinafter *Environmental and Energy Issues*].

<sup>105</sup> *Id.* at 7. See also Hilary French, *Environmental Reconstruction in Central Europe*, 1 U.S. CENTER FOR SOVIET-AMERICAN RELATIONS/USCAR REPORTS 61, 62 (Fall 1991) (Life expectancy rates in industrialized regions of Central Europe are significantly lower than in cleaner parts).

<sup>106</sup> *Environmental and Energy Issues*, *supra* note 104, at 7.

<sup>107</sup> U.S. DEPARTMENT OF COMMERCE, *THE ENVIRONMENTAL SECTOR IN POLAND: OVERVIEW AND BUSINESS CONTACTS* 4 (1991). Most of these sulfur dioxide emissions are from sources where the sulfur content in lignite is high where no pollution controls are used. *Id.*

<sup>108</sup> French, *supra* note 105, at 62.

<sup>109</sup> See U.S. DEPARTMENT OF COMMERCE, *supra* note 107; French, *supra* note 103, at 113.

<sup>110</sup> U.S. DEPARTMENT OF COMMERCE, *supra* note 107, at 3. Government pricing of raw materials and energy products have traditionally been well below their economic value, and led to waste and overuse. *Id.*

<sup>111</sup> STAFF OF SENATE COMM. ON ENERGY AND NATURAL RESOURCES, 102d Cong., 1st Sess.,

European country was also characterized by a dependence on a single energy supplier, the former Soviet Union.<sup>112</sup>

While restructuring their economies, Eastern European nations must also meet their industrial and consumer energy needs. However, major new projects could accelerate damage to the already stressed environments. Because of the careful balance of priorities that proper policy implementation necessitates, the planning process becomes increasingly important, especially as industries are transferred from government control and converted to more efficient private ownership.<sup>113</sup>

#### a. Eastern European Energy use, Infrastructure Problems, and Future Plans

Eastern Europe is a significant energy consumer, comprising approximately six percent of the world's total energy demand.<sup>114</sup> Unfortunately, this energy consumption is grossly inefficient and highly polluting.<sup>115</sup> In fact, Eastern European countries consume over sixty percent more energy per unit of national income than do Western countries.<sup>116</sup>

Eastern Europe has depended mainly on its plentiful coal reserves to meet its energy requirements.<sup>117</sup> However, much of the coal supply is brown coal, or lignite, which is of low quality and high sulfur content,<sup>118</sup> greatly increasing the environmental damage normally associated with the burning of fossil fuel.<sup>119</sup> The region also contains limited oil and gas reserves,<sup>120</sup> and relies to a lesser extent on hydropower and nuclear power resources.<sup>121</sup>

ENERGY PROFILES OF CZECHOSLOVAKIA, HUNGARY AND POLAND, AND THEIR EMERGING FREE-MARKET ECONOMIES 5 (Comm. Print 1991) [hereinafter ENERGY PROFILES].

<sup>112</sup> *Id.*

<sup>113</sup> See, e.g., Ruth Greenspan Bell, *Industrial Privatization and the Environment in Poland*, 2 ENVTL. L. REP. 10,092 (1992); *Privatization in Czechoslovakia: Casino Capitalism*, ECONOMIST, Sept. 12, 1992, at 77. (privatization is necessary to stimulate major performance improvements in industry, energy generation, transmission, and service distribution systems).

<sup>114</sup> Internal Background Paper prepared by Denise Dwyer, International Economist, Office of International Affairs, Department of Energy, entitled Eastern European Energy Situation: Overview, IE-141, 1 (Dec. 8, 1991)(on file with the *Case Western Reserve Journal of International Law*).

<sup>115</sup> *Id.*

<sup>116</sup> *Id.*

<sup>117</sup> *Id.*

<sup>118</sup> *Id.*

<sup>119</sup> *Id.* French, *supra* note 105, at 62.

<sup>120</sup> Dwyer, *supra* note 114 at 1. These resources have not been fully utilized.

<sup>121</sup> *Id.* at 2.

Production of energy in Eastern Europe increased slightly during the 1980s. Nonetheless, the region must still import to meet about forty percent of its energy demand.<sup>122</sup> However, most Eastern European countries are seeking to diversify their import sources to reduce their dependence on the Soviet Union's successor, the Commonwealth of Independent States ("CIS").<sup>123</sup>

Eastern Europe's energy production, processing, and transportation systems are complex and outdated, generally inefficient, harmful to the environment, and linked to the former Soviet Union.<sup>124</sup> The areas most in need of attention include:

- Deteriorating oil and coal production facilities with declining outputs;
- The lack of oil refineries capable of converting heavier crudes into quality lighter products;
- Nuclear facilities with inherently dangerous (safety and environmental) characteristics; and
- Energy transportation and distribution systems that facilitate CIS imports but are incapable of handling adequate volumes of energy from other sources.<sup>125</sup>

In summary, the countries of Eastern Europe greatly need more - but efficient and clean - energy. Each nation also has a strong incentive to diversify its resource base, while moderating dependence on foreign imports. Finally, the energy infrastructure of each nation needs to be modernized.

#### b. Privatization in Eastern Europe

A mass transfer of industry from government to private ownership is an economic necessity for the emerging democracies of Central and Eastern Europe.<sup>126</sup> Privatization is a key step in the move toward market

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<sup>122</sup> *Id.* at 3. Energy import dependence varies according to the type of fuel and the individual country's needs. *Id.* Eastern Europe imports 59% of its oil, 22% of its natural gas, 12% of its coal, and 7% of its nuclear or hydro-electricity. *Id.* Bulgaria and Hungary each depend on imports for over 60% of their energy needs, while in the former CSFR, Yugoslavia, and Romania, imports accounted for only about one-third of energy supplies. *Id.*

<sup>123</sup> *Id.* at 3. Continued reliance on the CIS for energy imports is risky due to the reduction of subsidies from the CIS, new and daunting requirements for payment in hard currency, the instability of some of the CIS governments, and reduced outputs of CIS oil and gas reserves.

<sup>124</sup> *Id.* at 3. There is an urgent need to retrofit or replace existing facilities because of the many years of inefficient energy use and environmental disregard. Private Power Projects, *supra* note 102, at 7. In many cases, essential pollution controls are nonexistent; French, *supra* note 105, at 62.

<sup>125</sup> Dwyer, *supra* note 114, at 3-4.

<sup>126</sup> See THE WORLD BANK, THE WORLD BANK ANNUAL REPORT 1992, 138 (1992).

economies that are accountable to the public, competitive, efficiently managed, and industrially diverse.<sup>127</sup> Although some private power projects are already under way,<sup>128</sup> there are numerous obstacles to the rapid privatization of the Eastern European energy industries.<sup>129</sup> In addition to crumbling and outdated physical facilities, the legal, regulatory, and managerial framework has yet to be developed to support an efficient private power industry.<sup>130</sup>

Because of the inherent risk, potential complications, and delay associated with such a radical social transformation, investors have been cautious.<sup>131</sup> However, some are willing to take risks, and foreign funds have begun to flow into Hungary and the former Czechoslovakia.<sup>132</sup> Multilateral and bilateral international agencies and institutions have also shown a willingness to support projects in Eastern Europe.<sup>133</sup> These and future financial commitments could be utilized to encourage careful planning as an integral part of the modernization of the obsolete energy systems throughout Eastern Europe.

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<sup>127</sup> See French, *supra* note 103, at 113-14. Additional structural deficiencies include high subsidies, a bias toward heavy industry, and ineffective energy conservation incentives.

<sup>128</sup> *Private Power Projects*, *supra* note 102, at 7. In Poland, for instance, there are already "as many as a dozen projects underway." *Id.* (quoting, Arun Sen, Vice-President, Hart Associates).

<sup>129</sup> See generally *Business in Eastern Europe Survey*, *ECONOMIST*, Sept. 21, 1991, at 2 (discussing the sequencing of reforms, the need for new laws to stimulate foreign investment, and the shortage of skilled management).

<sup>130</sup> *Private Power Projects*, *supra* note 102, at 8. Nonetheless, the former CSFR and Hungary have each made progress toward privatizing their power industries. *Id.* See also French, *supra* note 103; *THE WORLD BANK ANNUAL REPORT 1992*, *supra* note 126, at 138 ("increased attention to issues of governance and to the restructuring of state enterprises is required in parallel with the privatization process").

<sup>131</sup> See, e.g., Bell, *supra* note 113 (discussing the connection between privatization and potential liability for existing environmental damage); Judy Dempsey, *Inheriting the Earth*, *FIN. TIMES*, Mar. 13, 1992, at 12. For a summary of additional business and investment considerations see Jeffrey P. Bialos & Michael S. Shapiro, *Intellectual Property and Technology Transfers: Special Considerations for Doing Business in Eastern Europe*, 2 *J. PROPRIETARY RIGHTS* 1 (Nov. 1990).

<sup>132</sup> In 1991, \$1.3-billion was invested in Hungary, \$600-million in the former Czechoslovakia. *Private Power Projects*, *supra* note 102, at 8.

<sup>133</sup> The European Bank for Reconstruction and Development and the World Bank have pledged about \$11 billion. *Id.* The European Investment Bank has scheduled \$1.7 billion ECU for Europe, and the United States government has budgeted \$1 billion in aid. *Id.*



c. Environmental Protection is Critical to the Newly Emerging Democracies

Environmental protection is now becoming a much higher priority in Eastern Europe.<sup>134</sup> The recently attained economic goal of officially joining together European nations into one unified bloc has led to an incentive for each nation to plan to meet European Community ("EC") environmental standards.<sup>135</sup> Unfortunately, costs to repair the existing damage are estimated in the hundreds of billions of dollars over the next twenty years.<sup>136</sup> Difficult choices, therefore, have to be made regarding whether to salvage existing industries (and the included jobs) by investing in remedial pollution controls, or to invest in new industries using new technology and more efficient process management.<sup>137</sup> Moreover, limited administrative resources must be distributed between planning, the establishment of standards, and enforcement priorities.<sup>138</sup>

Given the many complex issues confronting Eastern Europe, a comprehensive approach to energy planning, such as IRP, is needed to coordinate the often-conflicting priorities. As the following country-specific discussions demonstrate, IRP can provide fundamental advantages, as compared to otherwise fragmented or externalized decision-making.

2. Hungary as a Case Study for the Adoption of IRP

a. Energy Resources and Environmental Concerns in Hungary

Hungary was an agricultural nation until 1945, when it began to develop its industrial base;<sup>139</sup> today it is the least energy intensive nation

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<sup>134</sup> See David R. Berz, *The International Environmental Perspective 5* (1991) (unpublished manuscript on file with Weil, Gotshal & Manges, Washington, D.C.) (noting the environment as a top priority in Hungary and the former CSFR). *But see, e.g., Environmental Regulation is Low Priority in Nations' Market Transition, Report Says*, INT'L ENVTL REP. (BNA), July 15, 1992, at 468 (discussing *Paradise Deferred: Environmental Policymaking in Central and Eastern Europe*, a report by the Royal Institute of International Affairs in London describing environmental administrations lacking experience and struggling for survival due to systemic problems).

<sup>135</sup> See, e.g., *New Air Quality, Waste Management Laws Expected to be Compatible with EC Measures*, INT'L ENVTL REP. (BNA), Jan. 16, 1992, at 7 (The former CSFR is currently attempting to comply with EC environmental standards).

<sup>136</sup> ENERGY PROFILES, *supra* note 111, at 7; French, *supra* note 103, at 115.

<sup>137</sup> *Environmental and Energy Issues*, *supra* note 104, at 15 (statement of Dan Beardsley, Director, Office of International Activities, E.P.A.).

<sup>138</sup> See THE WORLD BANK, *WORLD DEVELOPMENT REPORT 1992, DEVELOPMENT AND THE ENVIRONMENT* 13 (1992).

<sup>139</sup> *Id.* at 30; ENERGY PROFILES, *supra* note 111, at 27.

in Eastern Europe.<sup>140</sup> By Eastern European standards, Hungary has a relatively balanced energy mix, composed of coal and lignite, oil, natural gas, and nuclear.<sup>141</sup> However, 38% of the country's electric generation depends on a single nuclear facility.<sup>142</sup>

In Hungary, the basic strategy has been to increase reliance on natural gas and to phase down coal-fired electricity. The current reliance on coal threatens further environmental damage and is rapidly becoming more expensive because of increased mining costs.<sup>143</sup> However, a goal for designing a basic strategy to reduce coal consumption faces many competing policy obstacles. For instance, Hungary must address its growing energy demand, as well as its precarious reliance on imports from the CIS.<sup>144</sup> In order to accomplish this, Hungarian energy policy to date calls for the addition of at least 2,000 MW of capacity from either a single nuclear station or a mix of hard coal, lignite, and combined cycle gas facilities.<sup>145</sup>

At the same time, Hungary plans to decrease its reliance on the CIS by diversifying its foreign import sources. Hydro-electric generation promised an alternative solution until public opposition on environmental and other grounds forced Hungary to withdraw in May 1990 from a major joint project with the former CSFR to construct the proposed Nagymaros Dam.<sup>146</sup> The Nagymaros project remains extremely controversial as Slovakia has continued work on the project while Hungary has called for international intervention on its behalf.<sup>147</sup>

The lack of modern equipment and machinery has also made the removal of Hungary's massive workable coal reserves<sup>148</sup> quite costly.<sup>149</sup>

<sup>140</sup> ENERGY PROFILES, *supra* note 111, at 38.

<sup>141</sup> *Id.* at 27. Although Hungary's diversification is small compared with Western nations, Hungary leads the Eastern European nations in energy diversification. *Id.* at 30.

<sup>142</sup> *Id.* at 37. Because of the risk of energy shortages and fair pricing concerns, such a dependence would be intolerable in the United States and other industrialized nations.

<sup>143</sup> *Id.* Several projects are planned to retrofit existing plants to utilize gas turbines. *Id.* Coal-fired electricity is expected to decrease to 19% by the year 2000; reliance on oil and gas is expected to increase to 31% and 34%, respectively. *Id.* at 37.

<sup>144</sup> *Id.* at 31. Hungary relies on energy imports to satisfy half of its consumption needs and may import as much as 60% or 70% by the year 2000. *Id.* Ninety-five percent of these imports have been from the former Soviet Union. *Id.*

<sup>145</sup> *Private Power Projects*, *supra* note 102, at 8.

<sup>146</sup> ENERGY PROFILES, *supra* note 111, at 20; Philip Warburg, Opening the Door, ENVTL. FORUM 18, 20 (Nov./Dec. 1991) (environmental activism is increasing in post-communist Central Europe). See *Dam Construction Moves on Despite Intense Environmental Opposition*, INT'L ENVTL. DAILY (BNA), Nov. 20, 1992.

<sup>147</sup> *Dam Construction Moves on Despite Intense Environmental Opposition*, *supra* note 146.

<sup>148</sup> ENERGY PROFILES, *supra* note 111, at 35. There is probably enough coal to supply the nation for over 100 years.

<sup>149</sup> *Id.* Production costs have also increased with the depths of exiting mines, and subsidies have

As a result, the Hungarian government plans to close all unprofitable coal mines,<sup>150</sup> and as coal production decreases, the existing demand is to be met by increasing coal imports from the former East Germany and the West.<sup>151</sup> This short-term strategy may prove costly, however, because most of Hungary's coal-fired plants are designed to burn low quality domestic coal, and lack much-needed modern equipment and pollution controls.<sup>152</sup>

Intensive modernization will be required to meet the Hungarian population's growing demand for energy.<sup>153</sup> Hungary has domestic reserves of oil, natural gas, and uranium, but has already utilized the most accessible deposits.<sup>154</sup> An interim reliance on imports may be unavoidable, as there have been problems maintaining even the current level of natural gas production.<sup>155</sup>

Nuclear power expansion in Hungary has been stalled since the democratic government gained control,<sup>156</sup> and public opposition to the existing Paks nuclear facility has grown since the Chernobyl disaster.<sup>157</sup> Nevertheless, the Hungarian government has been negotiating with Italy and Germany for the design and construction of two nuclear plants.<sup>158</sup>

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been used to lower market prices. *Id.* The World Bank required, as a condition on its loan, that subsidies be curtailed sharply and that coal mining become financially self-supporting. *Id.* These subsidies, pursuant to the World Bank requirement, have decreased and by the middle of 1991 were to have been completely removed. *Id.*

<sup>150</sup> *Id.*

<sup>151</sup> *Id.* As the need for imports increase, the incentive for conservation measures should increase as well.

<sup>152</sup> *Id.*

<sup>153</sup> *Id.* at 27. It is doubtful whether Hungary will be able to continue its current level of oil production. *Id.* at 32. Moreover, because today the CIS cannot meet all of Hungary's oil needs, OPEC oil supplies are increasingly attractive. *Id.* at 27. In addition, Hungary has decided to privatize the oil import industry. *Id.* Iran has expressed an interest in utilizing Hungary's refineries for processing oil, and Kuwait is part of a joint oil deal to establish fifteen to twenty gas stations. *Id.* at 34.

<sup>154</sup> *Id.* at 27.

<sup>155</sup> Production is expected to drop by the year 2000. *Id.* However, significant deposits of low quality, partly inflammable gas are yet to be exploited. *Id.* A new plant, now under construction, will have the capability to process this lower quality gas. In addition, the World Bank has authorized a \$100 million loan for oil and gas exploration in Hungary. *Id.* Hungary is also seeking to establish a link to the European gas system, although this will require extensive pipeline equipment and construction. *Id.* at 35. Hungary plans to expand its pipeline system and join the Western European network in order to diversify its access to natural gas imports in the future. *Id.* The pipeline system will also enable Hungary to transport gas to remote areas and to other countries. *Id.*

<sup>156</sup> *Id.* at 36.

<sup>157</sup> *Id.*

<sup>158</sup> *Id.* The project is to be financed by the sale of electricity to Germany and France. *Id.*

Like other Eastern European countries, Hungary has suffered from severe environmental degradation. Although the overall environmental and health hazards in Hungary are not as extreme as those in other Eastern European countries, such as Poland and Slovakia,<sup>159</sup> air quality problems are indeed severe in the industrialized areas.<sup>160</sup> One in seventeen deaths results from air pollution,<sup>161</sup> and there are even pay "oxygen booths" to give people with respiratory problems at least some relief from the polluted air.<sup>162</sup>

As one might expect, the utility industry accounts for much of the pollution, as forty percent of Hungary's sulfur dioxide emissions are from power plants, most of which burn low quality, high sulfur, coal.<sup>163</sup> In fact, no Hungarian power stations are even equipped with environmentally helpful flue gas desulfurization (FGD) systems.<sup>164</sup> Moreover, the future of Hungary's utility industry is far from certain. Hungary has ended its state monopoly on oil imports,<sup>165</sup> and is privatizing its oil and gas company (OKGT).<sup>166</sup> Restructuring is also planned for the electricity industry. However, the details have not been finalized.<sup>167</sup>

#### b. The Potential Importance of IRP for Hungary

IRP could work well in Hungary, considering its history of leadership in economic innovation within a socialist society. IRP offers an attractive alternative (1) to the extremes of command-and-control, or rigid central planning, and (2) to the present decentralized, and at times haphazard, private development without effective administrative or public review.

IRP is intended to provide a thorough evaluation of potential pitfalls, as well as options, and to address public concerns before projects reach the construction stage. Since IRP forces regulators and utilities to evaluate ventures in the larger context, with maximum input and consideration of alternatives and potential impacts, it is more likely that unexpected complications will be detected early in the energy planning process.

IRP could also help to avoid potentially devastating opposition to nuclear projects. The choice to build a nuclear power plant should be

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<sup>159</sup> INTERNATIONAL ENERGY AGENCY, ENERGY POLICIES: HUNGARY, 1991 SURVEY 28 (1992).

<sup>160</sup> *Environmental and Energy Issues*, *supra* note 104, at 7.

<sup>161</sup> *Id.*

<sup>162</sup> *Id.*

<sup>163</sup> INTERNATIONAL ENERGY AGENCY, *supra* note 159, at 29.

<sup>164</sup> *Id.*

<sup>165</sup> ENERGY PROFILES, *supra* note 111, at 40.

<sup>166</sup> *Id.*

<sup>167</sup> *Id.*

based on a comprehensive energy plan, and a feasibility evaluation, rather than as a last resort in a series of compromises and substitute plans. Used in this way, IRP could possibly have helped to avoid the extensive public outcry over the Paks nuclear facility.

Hungary has experienced complications and difficulties in almost every one of its energy resource sectors, as discussed above. This history indicates a special need to incorporate a comprehensive planning process like IRP, and a need to examine each energy option very carefully. IRP can factor in the worst case, sunk-cost possibilities, and the relative sensitivity of various energy base assumptions. Thus, IRP can enhance the attractiveness of low risk options such as energy conservation measures. Moreover, by assigning costs to availability, safety, and environmental concerns, the detriment of price-distorting subsidies can be more clearly appreciated. This, in turn, could increase public understanding and support for painful, but sometimes necessary, market-based price adjustments.

Project commitments involving the World Bank, other European and international lending institutions, or supplier countries present the opportunity for Hungary to obtain support from companies, governments, and administrative organizations with sophisticated planning capabilities. IRP could even be incorporated into technology cooperation considerations, as a means to enhance Hungary's self-sufficiency. Then, as planning assets become available in Hungary, the accessibility of sound IRP techniques and reliable project commitments will become a significant incentive for additional investors. In other words, if an international agency or lending institution were to initiate a sound IRP process in Hungary, spurring intelligent energy development, it could start a chain reaction resulting in a recognition that Hungary is an attractive place for foreign commitments.

To be effective, IRP must be coordinated with privatization and law reform, constitutional progress, and the continuing development of national, international, and EC standards. Rather than complicating the process, however, IRP could serve to ensure that both domestic and external programs affecting Hungarian energy development work toward the same objectives. Moreover, IRP can incorporate EC environmental standards, for instance, in order to guarantee compliance. A commitment to an energy strategy based on IRP could also help Hungarian ministries to eliminate internal disagreements and expedite the highest priority privatization projects.

Vast experience is not required to begin to implement IRP. Rather, analysts and planners in developing countries need only learn general principles.<sup>168</sup> Specific expertise can be provided by international or-

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<sup>168</sup> WORLD RESOURCES INSTITUTE, *supra* note 1, at 151.

ganizations with in-house, experienced, energy professionals and can be imported through the retention of United States industry authorities. In the short term, then, foreign expertise should be sufficient until domestic planning professionals obtain a sound understanding of the IRP process.

### 3. Slovakia as a Case Study for the Adoption of IRP

#### a. Energy Resources and Environmental Concerns in Slovakia

With the formal separation of the CSFR into Slovakia and the Czech Republic on January 1, 1993,<sup>169</sup> the future of energy development and planning is not clear. The transformation from a single, coordinated energy system under the former CSFR to two independent systems will undoubtedly require significant changes to existing energy use, production, and development. Nonetheless, an analysis of the former CSFR's energy and environmental history is useful as a backdrop to the consideration of Slovakia as a case study for the adoption of IRP.

The CSFR had a long history of industrialization.<sup>170</sup> The Czechoslovak economy, therefore, was disproportionately comprised of energy-intensive heavy industry, much of which is in need of modernization.<sup>171</sup> In 1980, the government introduced energy conservation standards and

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<sup>169</sup> President Bush recognized and offered to establish full diplomatic relations with the newly independent states on January 1, 1993. *U.S. Recognizes, Offers Full Relations With Independent Czech, Slovak States*, INT'L TRADE REP. (BNA), Jan. 13, 1993, at 58. All United States agreements with the former CSFR in force at the time of its dissolution January 1 will remain in effect with respect to both Slovakia and the Czech Republic. *Id.* With the division of the CSFR into independent states, World Bank loans were proportionately divided between Slovakia and the Czech Republic. In 1991, the World Bank extended a \$450 million dollar loan to support the "country's rapid transition to a market economy." THE WORLD BANK, THE WORLD BANK ANNUAL REPORT 1991, at 15 (1991). The structural adjustment loan was to aid the former CSFR to "deregulate its economy, liberalize its pricing policies, and help utilities initiate cost-based rate structures." ENERGY PROFILES, *supra* note 111, at 24. In 1992, the World Bank extended a \$246 million dollar energy loan to improve power plant efficiency, modernize transmission systems, and to facilitate the interconnection of power grids. THE WORLD BANK ANNUAL REPORT 1992, *supra* note 126, at 165. Telephone interview with Information Officer of Country Department II, The World Bank (Feb. 10, 1992).

<sup>170</sup> ENERGY PROFILES, *supra* note 111, at 11. The CSFR's industrialization dates back to the 19th century. *Id.*

<sup>171</sup> *Id.* Industrial energy consumption increased throughout the 1970s and into the 1980s, primarily due to the government's emphasis on developing its steel, iron, and petrochemical industries. *Id.* Heavy industry now accounts for over 50% of the former CSFR's primary energy consumption. *Id.* at 21. The former CSFR industrial customers also utilized almost 80% of the electricity generated within the CSFR. *Id.*

controls.<sup>172</sup> However, these conservation standards were largely ignored because the achievement of production goals set by the government under its economic plan was often emphasized at the expense of energy savings.<sup>173</sup>

Electricity generation in the CSFR was distributed between thermal, hydro-electric, nuclear, and coal — with low quality coal providing most of the capacity.<sup>174</sup> The vast majority of the CSFR's hydro-electric power was to be produced by the Gabčíkova-Nagymaros hydro-electric project. As mentioned above, however, Hungary's withdrawal from the project combined with recent controversy surrounding its construction has put the project's completion in doubt. Nonetheless, the newly independent nation of Slovakia is expected to forge ahead with the project since the Gabčíkova dam alone is expected to provide seven percent of the country's energy needs.<sup>175</sup>

The former CSFR possessed significant reserves of lignite and brown coal,<sup>176</sup> although not all the reserves were recoverable. The recoverability problems, combined with diminishing reserves, resulted in a national energy policy that favored nuclear energy and natural gas.<sup>177</sup> The CSFR's energy supply plans also included cutbacks in oil imports<sup>178</sup> and a decreasing dependence on coal.<sup>179</sup> The policy was largely a response

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<sup>172</sup> *Id.* at 22.

<sup>173</sup> *Id.* The former CSFR's experience with energy conservation measures in the early 1980s is typical of "the limits of an energy conservation policy implemented in a Communist country." *Id.*

<sup>174</sup> *Private Power Projects*, *supra* note 102, at 8. The majority of coal and lignite production is utilized for electricity generation, heating, and industrial steam production. *Id.* at 16. Understandably, the predominance of poor quality coal is the cause of most of the CSFR's environmental problems. *Id.* Other sources of energy include oil and natural gas.

<sup>175</sup> See *Hydro Project Sparks Environmental and Political Controversy*, E. EUR. ENERGY REP., Nov. 15, 1992. Currently, the dispute over the future of the dam is pending before the International Court of Justice and a special commission set up by the European Community. *Id.*

<sup>176</sup> ENERGY PROFILES, *supra* note 111, at 16. Although the CSFR's coal reserves may last thirty to sixty years, with mining continuing at current rates, actual recovery depends on investments in modern mining equipment. *Id.*

<sup>177</sup> *Id.* at 20. Electricity imports from the [former] Soviet Union were used to meet short-term surges in electrical demand. *Id.* In addition, a pre-unification agreement with West Germany was reached to establish a direct current power grid allowing for transfers of needed and surplus power. *Id.* A large transmission line also is being constructed and is scheduled to be complete in 1993. *Id.*

<sup>178</sup> Cutbacks in CIS oil supplies caused the CSFR to reconsider its oil energy dependency. *Id.* at 17. Initially, the CSFR attempted to make do without seeking replacement supplies outside the Council for Mutual Economic Assistance ("CMEA"), the Communist trading system. *Id.* However, this resulted in the underutilization of the CSFR's refining capacity. *Id.* Later, the CSFR negotiated for additional oil supplies from Russia, the Ukraine, Uzbekistan, and Iran. *Id.* at 18.

<sup>179</sup> *Id.* The plan was to use nuclear power for electric generation and natural gas for home

to reductions in oil exports from the former Soviet Union, and the environmental degradation resulting from coal dependence.<sup>180</sup> However, as in Hungary, reducing dependence on coal remains difficult since many workers are employed by the coal industry,<sup>181</sup> and the resulting economic impact of worker displacement and unemployment hinders efforts to reduce coal production.<sup>182</sup>

Assuming the CSFR effort to reduce coal use is continued by Slovakia and the Czech Republic, natural gas imports will likely increase.<sup>183</sup> In fact, energy consumption based on natural gas has already risen in recent years, and the increases are expected to continue.<sup>184</sup> Like oil, natural gas flows primarily from the former Soviet Union<sup>185</sup> and the CSFR had in place an extensive pipeline system.<sup>186</sup> Since the separation of the two republics into sovereign states, the former CSFR gas industry has been restructured into separate Czech and Slovak oil and gas enterprises.<sup>187</sup>

Because nuclear power has been viewed as a potential solution to coal dependence,<sup>188</sup> the nuclear industry expanded rapidly in the 1980s.<sup>189</sup> However, there are problems with a reliance on nuclear power based on the inheritance of Soviet nuclear technology, which many today consider unsafe.<sup>190</sup> As a result, public opposition may make continued

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heating. *Id.*

<sup>180</sup> *Id.* at 11.

<sup>181</sup> *Id.* at 17.

<sup>182</sup> *Id.* The former government was considering training programs and early retirement plans for unemployed workers to alleviate this social pressure. *Id.* at 17.

<sup>183</sup> *Id.* at 18. By the year 2000, natural gas was expected to comprise 23% of the CSFR's primary energy consumption. *Id.* Only 10% of the CSFR's natural gas demands were met by domestic supplies, although the potential exists to increase production. *Id.* at 18-19.

<sup>184</sup> *Id.* at 21. Natural gas is primarily used for district and residential heating. *Id.* Natural gas consumption is metered, but the rates have been heavily subsidized. *Id.*

<sup>185</sup> *Environmental and Energy Issues*, *supra* note 104, at 22.

<sup>186</sup> ENERGY PROFILES, *supra* note 111, at 21. The CSFR had a 30,000 kilometer pipeline network for transporting former Soviet gas to Germany, Austria, Italy, France, and Yugoslavia. *Id.*

<sup>187</sup> See *Reorganization of Slovak Section of Transit Gas Pipeline*, Summary of World Broadcasts, The British Broadcasting Corp., Jan. 14, 1993, available in LEXIS, Nexis Library, Omni file.

<sup>188</sup> ENERGY PROFILES, *supra* note 111, at 20.

<sup>189</sup> *Id.* Nuclear power was to have represented over one-quarter of the electrical generation capacity of the former CSFR by the year 2000. *Environmental and Energy Issues*, *supra* note 104, at 22. Two new nuclear facilities are under construction, at Mochovce and Temlin. ENERGY PROFILES, *supra* note 111, at 21. Four reactors are planned at the Temlin site, but construction of two of the reactors has been postponed for financial reasons. *Id.* Controversy also erupted over the Temlin facility. Germany reported that the Temlin facility is located on a site with geological faults. Austria also is objecting and has offered to provide free electricity in exchange for the shut down of one of the currently operating nuclear facilities at another location. *Id.*

<sup>190</sup> *Id.* at 11. Among the most concerned are Germany, Austria, and the citizens of the former



expansion difficult in either Slovakia or the Czech Republic.<sup>191</sup> In addition, the former CSFR closed most of its uranium mines and fuel producing facilities because the costs of production greatly exceeded market prices.<sup>192</sup>

As in Hungary, the environmental degradation in the former CSFR is worrisome. Industrial pollution, primarily caused by sulfur-laden brown coal, the inefficient use of energy, and inadequate pollution controls, continues to damage crops and forests, and has resulted in significant health risks to the citizens of the former CSFR.<sup>193</sup> The economic impact is staggering. Crop damage alone will likely cost approximately \$192 million,<sup>194</sup> and former CSFR government officials estimated that they would need to spend at least the equivalent of \$23.7 billion on pollution controls over the next fifteen years.<sup>195</sup> Naturally, the health effects of such mass environmental degradation are distressing. For instance, in the dirtiest areas of the two new countries, it is estimated that life expectancy is shortened by as much as five years compared to cleaner regions.<sup>196</sup>

#### b. The Potential Importance of IRP for Slovakia

Because of the former CSFR's history of party-dominated, centralized authority, the project review and approval process in the new Slovakia can be expected to be both slow and arbitrary. Also, public opinion remains volatile because of the long lack of government responsiveness, and the public's high expectations for the new official representatives. An administrative strategy explicitly adopting IRP principles for energy development could help to assure both the public and international private investors that their concerns will be addressed through fair and consistent procedures.

With the help of IRP, Slovakian administrators would be able to rank and weigh energy priorities according to the best available data. They could give special consideration to concerns associated with privatization, technology, management efficiency incentives, environmental repercussions,

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CSFR. *Id.*

<sup>191</sup> *Id.* at 25. "Germany has recommended that all Soviet designed nuclear reactors built in former East Germany be shut down for safety reasons." *Id.* This is especially problematic because all the CSFR's current and planned reactors are of the same Soviet VVER type. *Id.* at 20-21.

<sup>192</sup> *Id.* at 21.

<sup>193</sup> See *Eastern Europe, Soviet Union can Select From West's Best Environmental Policies*, INT'L ENVTL. REP. (BNA) Nov. 21, 1990, at 485. The U.N. Economic Commission for Europe has estimated that 73% of the former CSFR's forests show signs of air pollution damage. *Id.*

<sup>194</sup> *Id.*

<sup>195</sup> *Id.*

<sup>196</sup> *Id.*

and investor security. Then, as new information becomes available, the IRP model could be revised accordingly.

As with Hungary, through the use of IRP expertise could be imported and channeled into the establishment of a comprehensive planning process, thereby helping to develop domestic talent for future energy projects. The integrity of the IRP format could also discourage vendors from recommending only the most expensive technologies, and could make official corruption more difficult to conceal. In addition, IRP should help to ensure the consideration of environmental costs during energy project development, a process sorely needed at the present time.

#### IV. CONNECTING IRP TO INTERNATIONAL DEVELOPMENT FUNDING

Given the pressing problems, and the numerous higher priorities facing developing countries, many probably will not wish to incorporate IRP without the explicit encouragement of industrialized nations. It is within the power of such nations to utilize the resources of major development lending institutions, and foreign assistance programs (such as the World Bank, U.S. A.I.D., and the European Bank for Reconstruction and Development), to urge developing countries, especially Eastern European nations, to adopt IRP into their energy planning processes.<sup>197</sup> Such adoption would help to prevent other nations from repeating the mistakes the United States utility industry has made.

In fiscal year 1992, the World Bank approved \$21.7 billion in loans to developing countries, \$3.1 billion (14.7%) of which was allocated for projects involving power generation.<sup>198</sup> In the same year, U.S. A.I.D. provided \$7.4 billion in assistance around the world.<sup>199</sup> In the energy sector, both organizations supported projects such as new plant construction, pricing-policy studies, and general technical assistance.<sup>200</sup>

With such vast financial influence, each organization could play an important role in fostering the use of IRP. In fact, through the integration of energy policy with broader development goals, the World Bank and U.S. A.I.D., among others, could explicitly encourage the use of IRP.<sup>201</sup>

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<sup>197</sup> See Hilary F. French & Lester R. Brown, *Eastern Europe's Clean Break with the Past*, in WORLD WATCH INSTITUTE, STATE OF THE WORLD 1993, at 118 (1993) (the World Watch Institute argues that the development banks should encourage the use of integrated resource planning).

<sup>198</sup> THE WORLD BANK ANNUAL REPORT 1992, *supra* note 126, at 183.

<sup>199</sup> UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, FISCAL YEAR 1993 SUMMARY TABLES 9 (1992).

<sup>200</sup> See UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, CONGRESSIONAL PRESENTATION FISCAL YEAR 1993, 529-30; THE WORLD BANK ANNUAL REPORT 1992, *supra* note 126, at 164-66.

<sup>201</sup> French & Brown, *supra* note 197.

### A. *The World Bank Could Tie IRP to Lending Decisions*

The World Bank is the primary institution through which industrialized nations provide contributions of investment capital and technical expertise to developing countries.<sup>202</sup> In fiscal year 1992, the World Bank made just over \$4 billion in energy-sector development loans, primarily in Asia and Africa.<sup>203</sup> The Bank's first energy-related loan in Eastern Europe was for a \$340 million project to assist in the privatization of Polish energy enterprises and to restructure the Polish oil, gas, and coal industries.<sup>204</sup>

The types of energy-sector projects generally funded by the World Bank include construction of new facilities, rehabilitation of existing facilities, least-cost supply studies, and other technical feasibility studies.<sup>205</sup> The World Bank also lends money to facilitate government reforms and to establish new governmental institutions.<sup>206</sup> These latter types of loans, called structural adjustment loans, attempt to ensure that a country dismantles tariffs, and controls subsidies to local business and other impediments to international trade.<sup>207</sup> Czechoslovakia, Hungary, and Poland combined received \$1 billion in structural adjustment loans in 1991.<sup>208</sup>

The World Bank project identification and development process begins with the designation of a staff of World Bank professionals who will be responsible for specific regions of the globe.<sup>209</sup> The staff then identifies certain sectors within each region, such as energy, industry,

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<sup>202</sup> THE WORLD BANK ANNUAL REPORT 1992, *supra* note 126, at 4-5. The World Bank is actually a group of institutions comprised of the International Bank for Reconstruction and Development ("IBRD"), the International Development Association ("IDA"), the International Finance Corporation, and the Multilateral Investment Guarantee Agency. *Id.* For the purposes of this article, references to the World Bank include only the IBRD and the IDA, both of which make direct loans to development projects. The IBRD makes funds available to most developing countries; and the IDA makes interest free loans to the poorest, least credit-worthy nations. *Id.*

<sup>203</sup> *See id.* at 164-66.

<sup>204</sup> THE WORLD BANK ANNUAL REPORT 1991, *supra* note 169, at 149.

<sup>205</sup> THE WORLD BANK, BIDDING FOR CONTRACTS IN WORLD BANK FINANCED PROJECTS: QUESTIONS AND ANSWERS 8 (1990); THE WORLD BANK ANNUAL REPORT 1992, *supra* note 126, at 164-66.

<sup>206</sup> *See* CHERYL PAYER, THE WORLD BANK: A CRITICAL ANALYSIS 152, 153-54 (1982) (World Bank often conditions loans on internal reforms); THE WORLD BANK ANNUAL REPORT 1992, *supra* note 126, at 60-61.

<sup>207</sup> *Id.* PAYER, *supra* note 206; THE WORLD BANK ANNUAL REPORT 1992, *supra* note 126, at 5.

<sup>208</sup> THE WORLD BANK ANNUAL REPORT 1991, *supra* note 169, at 15; the former Czechoslovakia received \$450 million, Hungary \$250 million, and Poland \$300 million. *Id.*

<sup>209</sup> *See* WARREN C. BAUM, THE WORLD BANK, THE PROJECT CYCLE (1991).

agriculture, or education, that would benefit from funding,<sup>210</sup> and begins to develop ideas for specific projects.<sup>211</sup> At the same time, the World Bank works closely with each individual country to determine whether that country is interested in developing the sectors and projects identified by the staff.<sup>212</sup> The World Bank also sets out to determine whether each country is willing, and economically sound enough, to borrow the necessary capital.<sup>213</sup>

Once the host country agrees to move forward, the World Bank performs detailed feasibility studies which are reviewed by the host government.<sup>214</sup> As a project nears the end of the design and planning phase, a formal appraisal is performed to verify that all necessary components of the project, including financing, supply, and institutional organization, are in place.<sup>215</sup> Then, the final loan agreement is negotiated and approved by the World Bank Board.<sup>216</sup>

The World Bank often attaches a number of conditions to its loans.<sup>217</sup> These conditions range from the general, which are written into virtually all loan agreements, to the specific — *i.e.*, those tailored to the nature of the project.<sup>218</sup> Generally, the conditions fall into three categories. First, financial covenants define the overall financial objectives of a project and may require changes in fiscal and economic policy to ensure success of the project and repayment of the loan.<sup>219</sup> Second, substantive covenants are attached to ensure that the specific purposes of the project will be satisfied.<sup>220</sup> Third, policy covenants may be included to address any changes in laws, regulations, or government institutions required to support development and growth initiatives.<sup>221</sup>

<sup>210</sup> *Id.* at 6-7.

<sup>211</sup> *Id.*

<sup>212</sup> *Id.*

<sup>213</sup> *Id.* at 8-17.

<sup>214</sup> *Id.*

<sup>215</sup> *Id.*

<sup>216</sup> *Id.* at 18.

<sup>217</sup> See MASON & ASHER, *supra* note 8, at 434-45 (1973); BAUM, *supra* note 209, at 17-18; WORLD BANK, ARTICLES OF AGREEMENT, art. III, § 4 (amended 1989) (section 4 sets out conditions on which World Bank disburses loans); WORLD BANK, INTERNATIONAL DEVELOPMENT ASSOCIATION, ARTICLES OF AGREEMENT, art. V, § 1 (1960) (list of World Bank loan conditions).

<sup>218</sup> MASON & ASHER, *supra* note 8, at 435.

<sup>219</sup> See BAUM, *supra* note 209, at 17; MASON & ASHER, *supra* note 8, at 423.

<sup>220</sup> See BAUM, *supra* note 209, at 18; WORLD BANK, ARTICLES OF AGREEMENT, art. III, § 4 (amended 1989); WORLD BANK, INTERNATIONAL DEVELOPMENT ASSOCIATION, ARTICLES OF AGREEMENT, art. V, § 1 (1960). See generally MASON & ASHER, *supra* note 8. For example, if money is provided for the construction of a school, the World Bank needs to be assured not just that a school will be built, but also that the appropriate books are bought and that the children who are supposed to attend the school actually will have the opportunity.

<sup>221</sup> See MASON & ASHER, *supra* note 8, at 420-45. Examples include requirements for reduced

Each of the covenants gives the World Bank a distinct and significant form of leverage over the countries and enterprises borrowing its funds. Substantive covenants, for instance, are used to require specific studies, tests, and other preparations that the World Bank considers essential to the success of its projects.<sup>222</sup>

Interestingly, the pre-project analyses that could be required in substantive covenants are similar to the various components of IRP.<sup>223</sup> For instance, basic demand and pricing analysis, each fundamental to IRP, are typically a part of the substantive covenant conditions of many energy-sector loans.<sup>224</sup>

World Bank energy officers are aware of IRP and its potential benefits for developing countries in the process of modernizing their energy sectors.<sup>225</sup> However, the actual use of full-featured, United States-style IRP seems to be rare, largely because the majority of the countries receiving international loans are not prepared to manage IRP programs.<sup>226</sup> IRP often requires large databases to help analyze how and when utility clients consume electricity. Most of the countries receiving World Bank loans do not have such a level of technical sophistication.<sup>227</sup> As a result, IRP is often separated into its component parts, and only those components that are feasible for a given project are required.<sup>228</sup> For example, rudimentary demand management and pricing policy studies such as "load management pricing" are sometimes encouraged.<sup>229</sup> Using these processes, governments or utility systems can supply total energy demand with smaller, less costly plants. In other cases, when IRP cannot be performed before a project is undertaken, the World Bank will often extend the loan first, and later assist the on-going project in collecting raw data and building the databases necessary to support demand management

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trade barriers, new laws, new government agencies, or transferred authority among agencies.

<sup>222</sup> *Id.* See generally BAUM, *supra* note 209.

<sup>223</sup> See MASON & ASHER, *supra* note 8, at 420.

<sup>224</sup> Telephone interview with Robert Saunders, Chief of the Energy Development Division, Industry & Energy Department, Office of Sector and Operations Policy (Nov. 10, 1992); MASON & ASHER, *supra* note 8, at 420. A World Bank Sector Working Paper highlights "system planning, which encompasses market forecasting and the selection of least-cost alternatives; evaluation of the structure, as distinct from the level of electricity tariffs . . ." as important considerations in energy sector loans. *Id.*

<sup>225</sup> Saunders Interview, *supra* note 224.

<sup>226</sup> *Id.* See French, *supra* note 197 (World Bank has not adopted integrated resource planning into its new strategy for future lending to electric utilities).

<sup>227</sup> *Id.*

<sup>228</sup> *Id.*

<sup>229</sup> *Id.* Load management pricing involves charging higher rates at peak demand times and lower rates during low demand times in order to reduce the maximum demand a generating facility will face on any given day.

techniques.<sup>230</sup>

IRP also requires significant institutional support in the form of stable government oversight, implementing regulations, and infrastructure. The World Bank often attempts to influence these institutional factors through structural adjustment loans and by using the policy covenants attached to those loans. For example, funding for a particular energy project might be withheld until the borrowing country has established a stable institutional home for IRP-type oversight,<sup>231</sup> or funding might be delayed until the borrowing country has rewritten certain tariffs that impede efficient investment in that country's energy sector.<sup>232</sup> At the institutional level, the World Bank views IRP as a flexible policy matter, rather than as an essential technical or monetary policy.<sup>233</sup> As a consequence, it requires varying degrees of policy and governmental conditions, and no firm guidelines seem to exist.

The World Bank is in a unique position to encourage loan recipients to incorporate IRP into their energy-sector planning processes. Although some elements of IRP are presently required before the World Bank will disburse any funds, World Bank officials seem to think that IRP, as practiced in the United States, is too complex, expensive, and impracticable to be exported to developing nations. If it can be demonstrated to the World Bank that the organizational complexities of IRP can be overcome, as they have in many instances in the United States, and that the initial extra cost required will eventually more than pay for itself, a more aggressive IRP policy in developing nations should be possible.

#### B. U.S. A.I.D. Could Link IRP to Lending Decisions

U.S. A.I.D. coordinates and disburses a large amount of U.S. foreign assistance. U.S. A.I.D.'s budget and funding priorities are set each year by Congress and the agency requested \$6.9 billion for fiscal 1993 — a slight increase from the \$6.7 billion appropriated in fiscal 1992.<sup>234</sup> The funds will be distributed through four major programs, each of which promotes a distinct element of U.S. foreign policy.<sup>235</sup> These programs are:

- Development Assistance ("DA"), which encompasses the basic

<sup>230</sup> *Id.*

<sup>231</sup> *Id.*

<sup>232</sup> *Id.*

<sup>233</sup> Saunders interview, *supra* note 224.

<sup>234</sup> UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, *supra* note 199.

<sup>235</sup> UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, PROGRAM OVERVIEW FISCAL YEAR 1993, 29-32 (1992).

- international anti-poverty and development programs favored by the U.S., mostly on behalf of the Third World;<sup>236</sup>
- Economic Support Funds ("ESFs") which are used to further U.S. foreign policy. These include major contributions to U.S. security partners (*e.g.* Israel, Egypt, Turkey); anti-drug initiatives; and money to stabilize the Republics of the former Soviet Union;<sup>237</sup>
  - Special Assistance Initiatives ("SAIs"), which were established by legislation in 1990 and which are the principle conduit for U.S. aid to Eastern Europe.<sup>238</sup>
  - Freedom Support ("FS"), approved by the United States House and Senate in the summer of 1992, and signed by the President on October 24, 1992, and is the principle conduit for United States aid to the emerging democracies of the former Soviet Union.<sup>239</sup>

Initially promulgated as part of the Support for Eastern European Democracy ("SEED") legislation of 1989,<sup>240</sup> SAIs represent the U.S. foreign-aid response to the end of Communist rule in Poland, Hungary, and the former Czechoslovakia. In addition to providing more than \$350 million for Eastern European redevelopment,<sup>241</sup> SAIs encourage specific spending priorities reflecting United States policy for the region.<sup>242</sup> These priorities include: (1) assistance in the establishment of democratic institutions and support for fledgling democratic governments; (2) privatization of state-owned enterprises; (3) energy and the environment; and (4) agriculture.<sup>243</sup>

<sup>236</sup> *Id.* at 29. DA accounts for about 40% of U.S. A.I.D. assistance. *Id.*

<sup>237</sup> *Id.* at 31. ESFs accounts for 45% to 50% of U.S. A.I.D. assistance. *Id.*

<sup>238</sup> *Id.* SAI Congressional authorization in FY 1991 and FY 1992 was \$369 million. Foreign Operations, Export Financing, and Related Programs Appropriations Act of 1991, Pub. L. No. 101-513, 104 Stat. 1979, 1992 (1990); Further Continuing Appropriations, Fiscal Year 1992, Pub. L. No. 102-266, 106 Stat. 92 (1992). U.S. A.I.D. has requested \$450 million for FY 1993. UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, *supra* note 199.

<sup>239</sup> The Freedom Support Act authorizes \$410 million in aid to assist the independent states of the former Soviet Union. Freedom for Russia and Emerging Evasion Democracies and Open Markets Support Act of 1992, Pub. L. No. 102-511, § 201, 106 Stat. 3320, 3330 (1992).

<sup>240</sup> Support for East European Democracy (SEED) Act of 1989, Pub. L. No. 101-179, 103 Stat. 1298 (1989).

<sup>241</sup> UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, *supra* note 200, at 552.

<sup>242</sup> *Id.* at 528-31.

<sup>243</sup> *Id.* For budgeting purposes, U.S. A.I.D. has broken the SAIs into the following programmatic components:

<i>1993 Budget Request</i>	
Development of Democratic Institutions	\$33.7 mm
Economic Restructuring	\$337.5 mm
Quality of Life	\$73.7 mm
Program Support	\$5.0 mm
<i>Total (rounded)</i>	<i>\$450.0 mm</i>

Congressional priorities form a baseline from which U.S. A.I.D. develops proposed projects.<sup>244</sup> In addition, developing countries periodically submit their own requests.<sup>245</sup> Using these two sources as a guide, U.S. A.I.D.'s professional staff develops specific programs and plans which are suitable for a particular region.<sup>246</sup> The individual countries are invited to participate only after a program is planned and contracted.<sup>247</sup> Only then does each country wishing to participate submit a request for funding.<sup>248</sup> Typically, nations have to reduce their requests to ensure that enough funding remains for a distribution of projects throughout the region.<sup>249</sup>

The essential goals and characteristics of U.S. A.I.D. funded projects are shaped before the recipient country has any opportunity to influence the planning.<sup>250</sup> While the agency and the host country government do tailor the program to fit local needs, U.S. A.I.D. projects are presented as near-complete packages.<sup>251</sup> Even after the recipient country gets involved, U.S. A.I.D. often contracts with technically expert U.S. firms to scrutinize project proposals to determine whether the proposed plan will satisfy U.S. interests.<sup>252</sup> A typical review might include separate financial and technical studies by independent contractors before final funding is approved.<sup>253</sup>

U.S. A.I.D. can and does use its funding to exercise leverage over grant recipients.<sup>254</sup> Such leverage can be exercised in the design phase, or by setting stringent technical standards which the project must meet during the review phase.<sup>255</sup> However, U.S. A.I.D. does not have a clear policy on when and to what extent this discretion should be invoked, and U.S. A.I.D. does not condition its participation in a project unless the

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*Id.* at 552.

<sup>244</sup> The description of the general process for each U.S. A.I.D. program for Eastern Europe was compiled from phone interviews with Gordon West, Director, Office of Economic Restructuring, Regional Mission for Europe (November 10, 1992), Michael Usnick, Controller, Office of Financial Management, Directorate for Finance and Administration (November 5, 1992), and Gail Rozell, Deputy Director, Office of European Country Affairs (November 5, 1992). U.S. A.I.D. projects in other regions of the world are developed differently, where, unlike in Eastern Europe, the projects are developed bilaterally with the recipient countries. West interview, *supra*.

<sup>245</sup> See interviews cited *supra* note 244.

<sup>246</sup> Usnick interview, *supra* note 244.

<sup>247</sup> See interviews cited *supra* note 244.

<sup>248</sup> *Id.*

<sup>249</sup> *Id.*

<sup>250</sup> West Interview, *supra* note 244.

<sup>251</sup> *Id.*

<sup>252</sup> *Id.* See also Usnick interview, *supra* note 244.

<sup>253</sup> Usnick interview, *supra* note 244.

<sup>254</sup> West interview, *supra* note 244.

<sup>255</sup> *Id.*



conditions are directly related to the goals of the specific project.<sup>256</sup> In other words, the agency would not require a country to incorporate IRP as a condition for assistance not related to resource or capacity planning. On the other hand, because U.S. A.I.D. retains control over the planning stages of the projects it funds, it could require energy projects receiving funds to incorporate IRP.<sup>257</sup>

Although the legislation appropriating funds for SAIs to Eastern Europe does identify IRP-like concepts, IRP as a comprehensive process has not been urged.<sup>258</sup> For example, the technical review of a recent Hungarian energy project did not include detailed IRP analyses, as one U.S. A.I.D. official put it, because IRP is not a high priority within the agency at the present time.<sup>259</sup> Consistent with this statement, thus far U.S. A.I.D. has funded only a small number of energy-efficiency projects in Eastern Europe.<sup>260</sup>

The decision whether to actually incorporate IRP into energy planning overseas essentially rests with the agency's project planners. U.S. A.I.D. planners could include IRP guidelines with the basic financial reporting requirements common to regionally-focused development plans. This mechanism would provide an important first step toward establishing at least a general framework for IRP in developing nations.

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<sup>256</sup> Rozell interview, *supra* note 244.

<sup>257</sup> See Usnick interview, *supra* note 244; West interview, *supra* note 244. U.S. A.I.D. does require, to some extent, the incorporation of IRP type processes on some projects, but it does not appear that full-fledged IRP is urged. See West interview, *supra* note 244.

<sup>258</sup> See interviews *supra* note 244.

<sup>259</sup> *Id.*

<sup>260</sup> About \$15 million under the SEED Act/SAI from 1990 to 1992. UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, U.S. ASSISTANCE TO CENTRAL AND EASTERN EUROPE 5, 11, 18, 30, 40, 52, 60, 66 (Summer, 1992).

The Energy Policy Act of 1992 authorizes the use of funds for broad improvement of the energy generation and distribution systems of developing nations. See, e.g., § 1203 of the Energy Policy Act of 1992:

Sec. 1203. Renewable Energy Export Technology Training.

(a) ESTABLISHMENT OF PROGRAM. - The Secretary, through the Agency for International Development, shall establish a program for the training of individuals from developing countries in the operation and maintenance of renewable energy and energy efficiency technologies in accordance with this section . . .

(b) PURPOSE. - The purpose of the program established under this section shall be to train appropriate persons in the system design, operation, and maintenance of renewable energy and energy efficiency equipment manufactured in the United States, including equipment for water pumping, heating and purification, and the production of electric power in remote areas.

Pub. L. No. 102-486, § 1203, 106 Stat. 2776 (1992).

## V. CONCLUSION

Any surviving illusion that the energy decisions of the United States, or any other country, are insular in nature should have been extinguished with the Chernobyl debacle, not to mention the discovery of the generation of acid rain beyond United States borders.

The need for a global approach to energy development and the environment — highlighted by the recent United Nations Conference on the Environment and Development in Rio de Janeiro, Brazil, and by the burgeoning movement to link international trade with environmental compliance — is no longer a particularly controversial issue. What remains controversial, however, is how best to introduce energy efficiency around the globe, especially in developing nations. Prioritization of energy and environmental issues, in the face of critically limited resources and rapid population growth, will require pragmatic — rather than academic — choices.

If the summary of U.S. IRP, and the Eastern European case studies explored in this article suggest anything, it is that greater employment of IRP worldwide could lead to significantly improved energy-related decisions in terms of economics and the environment. While it would be naive to anticipate immediate acceptance and widespread implementation of sophisticated planning techniques in the developing world, there is so much room for improvement that even marginal use of IRP could produce strikingly beneficial results.

The most obvious mechanism for persuading less developed countries and nations in transition to explore IRP would be to link critical aspects of this methodology to international development funding. Communication with officials from the World Bank and U.S. A.I.D. reveal that the interest level is considerable, although familiarity with the intricate details of IRP is still at an early stage.

The primary purpose of this article has been to provide information on IRP that can be absorbed by international policymakers and providers of capital, in the hope that this methodology can spread as quickly and effectively beyond our borders as it has within. While mindful of the words of Socrates, that "one cannot know until the evening how splendid the day has been," increased emphasis now on IRP decision-making, linked with international lending, could lead to short-term, as well as long-term, economic and environmental success stories.

