



The  
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**James M. Jeffords Center's  
*Vermont Legislative Research Service***



**Ground Water Extraction**

This report examines various groundwater extraction policies. Groundwater extraction is the process by which water found below the land surface is removed and then used for a variety of reasons including: personal, private, agriculture, industry, and energy use.<sup>1</sup> In recent years, groundwater extraction policies have become increasingly contentious as demand for freshwater has increased. This demand has led to a debate about whether water is a public good or a private commodity.<sup>2</sup> This report analyzes the state ground water extraction programs of Vermont, Maine, New Hampshire, and Michigan as well as policies in other countries, which include taxes levied on the extraction of water.

**Water as a Resource**

The notion of water as a limited resource first appeared in the United States in the early 20<sup>th</sup> century. This meant that water was finite; therefore, it needed to be conserved and carefully utilized.<sup>3</sup> Although, this idea first appeared in the United States at this time, different cultures throughout history have recognized the importance of water for sustaining human life and have legally protected it.<sup>4</sup> Recently, water management has become a contentious issue as conflicts have arisen over who has the right to control water and its distribution. Bottled water companies have been linked to the debate over privatization since some argue that these companies profit from water that belongs to the public domain and undermine the public's trust in government-run facilities. Proponents of water privatization contend that private firms are more efficient and capable of managing water than government agencies.<sup>5</sup> In this paradigm, water is perceived as a commodity to be bought and sold in the global marketplace.

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<sup>1</sup> Vermont Agency of Natural Resources, "No. 199 An Act Relating to a Groundwater Withdrawal Permit Program," Water Supply Division, June 9, 2008, accessed February 21, 2011, <http://www.anr.state.vt.us/dec/watersup/GWPRS/ACT199.pdf>

<sup>2</sup> Erica Gies, "Water Wars: Is Water a Human Right or a Commodity?" *World Watch* 22 (2009): 22-27, accessed February 28, 2010.

<sup>3</sup> W.J. McGee, "Water as a Resource," *Annals of the American Academy of Political and Social Science* 33 (1909): 37-50.

<sup>4</sup> Erica Gies, "Water Wars: Is Water a Human Right or a Commodity?"

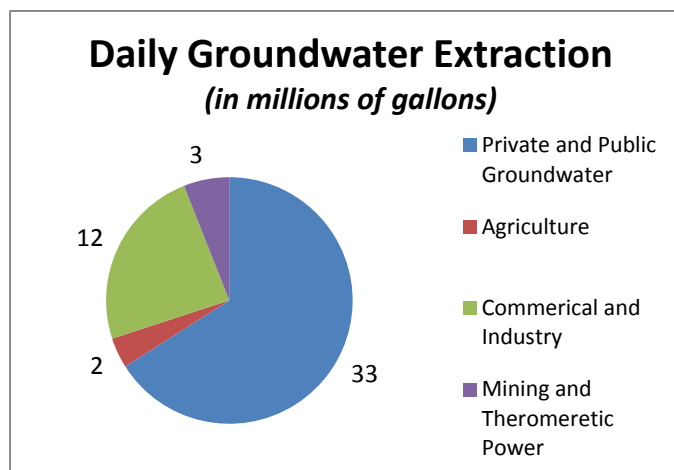
<sup>5</sup> Erica Geis, "Water Wars: Is Water a Human Right or a Commodity?"

Opponents of water privatization dispute such claims and advocate for water as a human right that should be left in the hands of the public.<sup>6</sup>

### State Policies on Ground Water Extraction

#### Vermont

Groundwater extraction in Vermont has become a vital issue in recent years. It is estimated by the Vermont Agency of Natural Resources (ANR) that as of 2008, 50 million gallons of groundwater are withdrawn every day.<sup>7</sup> The breakdown of the daily uses of groundwater extracted is depicted in Figure 1 below.



**Figure 1: Vermont Daily Groundwater Extraction**

**Source: Created by the authors, using data presented in the Vermont Agency of Natural Resources', "Part Seven: Groundwater Monitoring and Assessment."**

As Figure 1 shows, thirty-three million gallons of the total water extracted in Vermont can be attributed to the withdrawals from both private and public groundwater sources, agricultural withdrawals account for two million gallons daily, twelve million is attributed to commercial and industrial uses, and the rest is associated with mining and the powering of thermoelectric power.<sup>8</sup> More than 70 percent of Vermont's population utilizes groundwater as their source for

<sup>6</sup>Erica Geis, "Water Wars: Is Water a Human Right or a Commodity?"

<sup>7</sup> Vermont Agency of Natural Resources, "Part Seven: Groundwater Monitoring and Assessment," Water Supply Division, accessed February 21, 2011, [http://www.anr.state.vt.us/dec/waterq/planning/docs/305b/pl\\_305b04-part7.pdf](http://www.anr.state.vt.us/dec/waterq/planning/docs/305b/pl_305b04-part7.pdf)

<sup>8</sup>Vermont Agency of Natural Resources, "Part Seven: Groundwater Monitoring and Assessment," Water Supply Division, accessed February 21, 2011, [http://www.anr.state.vt.us/dec/waterq/planning/docs/305b/pl\\_305b04-part7.pdf](http://www.anr.state.vt.us/dec/waterq/planning/docs/305b/pl_305b04-part7.pdf)

drinking water. Forty-six percent of the population extracts the water themselves, while 24 percent is supplied by public water systems that use groundwater.<sup>9</sup>

The idea of groundwater as a “public good” has been politicized in Vermont and has led to the enactment of laws that seek to define groundwater in these terms and protect it. The Vermont State Legislature has enacted laws that seek to regulate all water supplies including groundwater. In 2009, the legislature adopted Act 199, which created the Groundwater Withdrawal Permit Program. This act established groundwater as a “public resource” for the benefit of all Vermonters. It also called for the protection of groundwater from pollution and deterioration.<sup>10</sup>

The 2009 act also created the Ground Water Withdrawal Permit Program. Under this program, individuals who extract more than 20,000 gallons of groundwater a day, on a set piece of land, averaged over a calendar month, must file a groundwater report with the Agency of Natural Resources. The report must include: location, capacity, frequency, and rate of withdrawal; describe the use for the water being withdrawn; and, if possible note the distance of this water from the nearest surface water and wetland. Exempt from filing such reports is water extraction in public emergency situations, those who are already in programs where they report similar data to the Agency of Natural Resources, public water systems, and closed-loop geothermal pumps. Included in the report are stipulations for those who seek to increase the amount of groundwater they extract.<sup>11</sup> Those who wish to augment their groundwater extraction to more than 57,600 gallons a day from a well or spring, on a single piece of land must apply for a permit with the Agency of Natural Resource. An integral aspect of their application process, consistent with the idea of water as a “public good,” is that applicants are required to hold a public forum on their proposed plan within their municipality.<sup>12</sup>

## Maine

The issue of groundwater extraction in the state of Maine has been a contentious one.<sup>13</sup> Though it possesses abundant water resources, the use of municipal water for resale by bottled water companies has prompted an outcry from many communities. Initially, state law followed what is known as the “absolute dominion” rule, which allowed a property owner to extract as much water as s/he desires, even if it adversely affected the flow to other properties. This rule was modified by a state law in 1987 which created a liability for someone who drew more water than needed for a single-family home and which consequently interfered with groundwater access for another household. The 1987 law only protected groundwater already in use by another party, and did not regulate the extraction of groundwater for commercial

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<sup>9</sup> Vermont Agency of Natural Resources, “Part Seven: Groundwater Monitoring and Assessment.”

<sup>10</sup> Vermont Agency of Natural Resources, “No. 199 An Act Relating to a Groundwater Withdrawal Permit Program,” Water Supply Division, June 9, 2008, accessed February 21, 2011, <http://www.anr.state.vt.us/dec/watersup/GWPRS/ACT199.pdf>

<sup>11</sup> Vermont Agency of Natural Resources, “No. 199 An Act Relating to a Groundwater Withdrawal Permit Program.”

<sup>12</sup> Vermont Agency of Natural Resources, “No. 199 An Act Relating to a Groundwater Withdrawal Permit Program.”

<sup>13</sup> Noel K. Gallagher, “Challenges piling up for Poland Spring,” *Portland Press Herald*, March 12, 2010, accessed March 2, 2011, [http://www.pressherald.com/archive/challenges-piling-up-for-poland-spring\\_2009-02-05.html](http://www.pressherald.com/archive/challenges-piling-up-for-poland-spring_2009-02-05.html)

purposes.<sup>14</sup> In 2007 the state adopted a statute which mandated that entities wishing to develop “significant groundwater wells” must get a permit from the state Department of Environmental Protection (DEP). The DEP is given authority to approve or deny these applications, and to define what extractions fall under this rule.<sup>15</sup> Additionally, Maine has a provision which requires the reporting of water usage if it exceeds 30,000 gallons per week.<sup>16</sup>

## **New Hampshire**

New Hampshire employs a comprehensive water use and regulation program of its own. The law’s purpose is to establish “requirements relative to documenting the identity and location of water uses and collecting accurate water use data to support management of the state’s water resources.”<sup>17</sup> The state’s registration and permit requirements apply to “any person whose cumulative incoming water or cumulative outgoing water exceeds an average of 20,000 gallons of water per day in any 7-day period, or exceeds a total volume of 600,000 gallons in any 30-day period.”<sup>18</sup>

There are alternate and/or additional regulations that apply to other aspects of usage. In “Limited Water Use” cases, “one-time incoming water or outgoing water that exceeds 140,000 gallons in any 7-day period but that by its nature is of limited duration and frequency shall register as a Limited Water User. “Limited Water User” cases include “filling swimming pools, test pumping water wells, pressure testing pipes or tanks, or materials cleanup in the case of spills.”<sup>19</sup> Also, there is a separate reporting process designated for agricultural water use.<sup>20</sup> The real differences occur only in the permit request form. That is, additional information and materials such as aerial maps, extraction estimates, and SIC codes are requested. The minimum extraction amounts remain the same.<sup>21</sup>

New Hampshire also requires accuracy standards in usage reports. “The method of measurement or quantification of water use shall be accurate to within 10 percent.”<sup>22</sup> In cases where meters are not to be used the measurement process is to be described in detail.<sup>23</sup>

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<sup>14</sup> Susan Z. Johannesman, Esq., Legislative Analyst, to Sean Faircloth, Maine State Representative, 7 August 2008, Maine State Legislature Office of Policy and Legal Analysis, accessed March 2, 2011,

[http://mainespring.org/pdf%20files/GW\\_extraction\\_sum-1.pdf](http://mainespring.org/pdf%20files/GW_extraction_sum-1.pdf)  
<sup>15</sup> [http://mainespring.org/pdf%20files/GW\\_extraction\\_sum-1.pdf](http://mainespring.org/pdf%20files/GW_extraction_sum-1.pdf)

<sup>16</sup> State of Maine, Department of Agriculture, “Water Withdrawal Law Q &A,” accessed March 2, 2011, <http://www.maine.gov/agriculture/mpd/irrigation/waterlaw.html>

<sup>17</sup> State of New Hampshire, New Hampshire Code of Administrative Rules, “Water Conservation; Use Registration and Reporting,” accessed March 4, 2011, <http://des.nh.gov/organization/commissioner/legal/rules/documents/env-wq2102toc.pdf>

<sup>18</sup> New Hampshire Code of Administrative Rules, “Water Conservation; Use Registration and Reporting.”

<sup>19</sup> New Hampshire Code of Administrative Rules, “Water Conservation; Use Registration and Reporting.”

<sup>20</sup> New Hampshire Code of Administrative Rules, “Water Conservation; Use Registration and Reporting.”

<sup>21</sup> New Hampshire Code of Administrative Rules, “Water Conservation; Use Registration and Reporting.”

<sup>22</sup> New Hampshire Code of Administrative Rules, “Water Conservation; Use Registration and Reporting.”

<sup>23</sup> New Hampshire Code of Administrative Rules, “Water Conservation; Use Registration and Reporting.”

## Michigan

The constitution of the state of Michigan gives the state legislature the authority to regulate the withdrawal and uses of the waters of the state, including both surface water and groundwater, to promote the public health, safety, and welfare and to protect the natural resources of the state from pollution, impairment, and destruction, subject to constitutional protections against unreasonable or arbitrary governmental action and the taking of property without just compensation.<sup>24</sup>

“This authority extends to all waters within the territorial boundaries of the state.”<sup>25</sup>

Michigan's statute requires the reporting of water extraction if a farm or commercial enterprise has the *capacity* to withdraw 100,000 gallons per day or 70 gallons per minute for agricultural purposes. Water extraction by farms is reported to the Michigan Department of Agriculture (MDA) while commercial extraction is reported to Michigan Department of Environmental Quality (MDEQ). The notable aspect of this law is that a report must be made if an agency has the ability or capacity to meet the designated amounts.<sup>26</sup>

Michigan's approach to designating extraction sources is primarily environmental. Water sources are broken up into four zones: Zone A, B, C, and D. Zones are distinguished by environmental qualities such as the water source size, if the water is warm or cold, and how the extraction will affect the fish and wildlife density. "Zone D withdrawal" (added on February 1, 2009), occurs in an area in which a withdrawal is likely to cause an adverse resource impact.<sup>27</sup> There is no distinction between surface water and groundwater sources.<sup>28</sup>

Michigan also offers insight into international complexities concerning water extraction. The Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement, for example, clarifies that “[t]he States and Provinces must balance economic development, social development and environmental protection as interdependent and mutually reinforcing pillars of sustainable development.”<sup>29</sup> This charter includes the 8 states of Illinois, Indiana, Michigan,

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<sup>24</sup> Under sections 51 and 52 of article IV of the state constitution of 1963 as cited in Michigan State Legislature, “Natural Resources and Environmental Protection Act (Excerpt),” accessed March 12, 2011, [http://www.michigan.gov/documents/deq/deq-wb-dwehs-wateruse-part327\\_186956\\_7.pdf](http://www.michigan.gov/documents/deq/deq-wb-dwehs-wateruse-part327_186956_7.pdf)

<sup>25</sup> Michigan State Legislature, “Natural Resources and Environmental Protection Act (Excerpt),” accessed March 12, 2011, [http://www.michigan.gov/documents/deq/deq-wb-dwehs-wateruse-part327\\_186956\\_7.pdf](http://www.michigan.gov/documents/deq/deq-wb-dwehs-wateruse-part327_186956_7.pdf)

<sup>26</sup> State of Michigan, Department of Agriculture, “2009 Water Use Conservation Plan,” accessed March 12, 2011 [http://www.michigan.gov/documents/mda/Final\\_WUR\\_Packet\\_2009\\_314764\\_7.pdf](http://www.michigan.gov/documents/mda/Final_WUR_Packet_2009_314764_7.pdf)

<sup>27</sup> State of Michigan, Michigan State Legislature, “Natural Resources and Environmental Protection Act (Excerpt),” accessed March 12, 2011, [http://www.michigan.gov/documents/deq/deq-wb-dwehs-wateruse-part327\\_186956\\_7.pdf](http://www.michigan.gov/documents/deq/deq-wb-dwehs-wateruse-part327_186956_7.pdf)

<sup>28</sup> Michigan State Legislature, “Natural Resources and Environmental Protection Act (Excerpt).”

<sup>29</sup> Council of Great Lakes Governors, “Great Lakes – St. Lawrence Basin Sustainable Water Resource Agreement,” accessed April 4, 2011 [http://www.cglg.org/projects/water/docs/12-13-05/Great\\_Lakes-St\\_Lawrence\\_River\\_Basin\\_Sustainable\\_Water\\_Resources\\_Agreement.pdf](http://www.cglg.org/projects/water/docs/12-13-05/Great_Lakes-St_Lawrence_River_Basin_Sustainable_Water_Resources_Agreement.pdf)

Minnesota, New York, Ohio, Pennsylvania, and Wisconsin, as well as the Canadian Provinces of Ontario and Quebec. The compact became both state and federal law in December 2008.<sup>30</sup>

This collaborative charter employs an “Adaptive Management approach to the conservation and management of basin water resources.”<sup>31</sup> Adaptive Water Management calls for a “water resources management system that provides a systematic process for evaluating, monitoring and learning from the outcomes of operational programs and adjustment of policies, plans and programs based on experience and the evolution of scientific knowledge concerning water resources” and other natural resources dependent upon water.<sup>32</sup> Ultimately, this standard-bearing charter serves as a sounding board for best-practices surrounding water resource management. The collective members of the agreement, known as the Regional Body, agree that ensuring the proper management of their water resources, regardless of borders, is essential to the natural health of the region.

Another example is can be found in the creation of the International Joint Commission. “Canada and the United States created the International Joint Commission because they recognized that each country is affected by the other's actions in lake and river systems along the border. The two countries cooperate to manage these waters wisely and to protect them for the benefit of today's citizens and future generations.”<sup>33</sup> The ultimate goal of the IJC is to “prevent and resolve” disputes between the United States and Canada.<sup>34</sup>

### **International Trade Agreements and Water**

The issue of groundwater extraction and use in the context of treaties is an especially complex one. As the world’s burgeoning population puts an increasing strain on its freshwater resources, disagreements over the allocation of these resources are ever-present. International agreements over water usage have been reached in efforts to resolve these conflicts.<sup>35</sup>

The North American Free Trade Agreement (NAFTA), adopted in 1994, is a trilateral treaty ratified by the United States, Canada, and Mexico. It created a free-trade zone between the three nations to provide freely-flowing goods among them.<sup>36</sup> The agreement did not include

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<sup>30</sup> Council of Great Lakes Governors, “Great Lakes – St. Lawrence Basin Sustainable Water Resource Agreement,” accessed April 4, 2011, [http://www.cglg.org/projects/water/docs/12-13-05/Great\\_Lakes-St\\_Lawrence\\_River\\_Basin\\_Sustainable\\_Water\\_Resources\\_Agreement.pdf](http://www.cglg.org/projects/water/docs/12-13-05/Great_Lakes-St_Lawrence_River_Basin_Sustainable_Water_Resources_Agreement.pdf)

<sup>31</sup> Council of Great Lakes Governors, “Great Lakes – St. Lawrence Basin Sustainable Water Resource Agreement.”

<sup>32</sup> Council of Great Lakes Governors, “Great Lakes – St. Lawrence Basin Sustainable Water Resource Agreement.”

<sup>33</sup> International Joint Commission. “About Us,” accessed April 4, 2011,

[http://www.ijc.org/en/home/main\\_accueil.htm](http://www.ijc.org/en/home/main_accueil.htm)

<sup>34</sup> International Joint Commission, “About Us.”

<sup>35</sup> Oregon State University, College of Science, “Atlas of International Water Agreements,” accessed March 22, 2011, [http://www.transboundarywaters.orst.edu/publications/atlas/atlast\\_html/interagree.html](http://www.transboundarywaters.orst.edu/publications/atlas/atlast_html/interagree.html).

<sup>36</sup> United States Department of Agriculture, Foreign Agriculture Service, “North American Free Trade Agreement,” last modified September 2, 2010, accessed March 2, 2011, <http://www.fas.usda.gov/itp/Policy/NAFTA/nafta.asp>

water as a commodity, yet it did not explicitly exempt water either.<sup>37</sup> All parties stated in 1993 that the agreement would not apply to water in its natural state.<sup>38</sup> In spite of this, some still fear that local, state, or federal governments might encounter difficulties should they attempt to regulate or prohibit large-scale extraction and shipment of water. They argue that water, once it is bottled, or placed in some sort of other container, will become a commodity, which could then fall under the NAFTA protocol.<sup>39</sup>

The United States is also a member of the World Trade Organization (WTO). This organization has levied fines against member states that failed to comply with its free-trade rules.<sup>40</sup> Given that laws governing water extraction and shipment have not heretofore been challenged on NAFTA or WTO grounds, it is difficult to determine whether these laws would ultimately be superseded by trade agreements.

### Taxation

Severance taxes, those applied to companies which extract natural resources from the earth,<sup>41</sup> are employed to reap a financial benefit from the activity on the part of a government and to control environmental impact. Traditionally, these apply primarily to the removal of materials such as oil, natural gas, coal and timber. In the United States, states impose a number of taxes on activities including oil drilling, salmon fishing, logging, and uranium mining.<sup>42</sup>

In the United States, severance taxes on water are being discussed around the country, but not much legislation on the matter has been enacted thus far. In Arizona, the state Department of Environmental Quality assesses a water-use tax of 65 cents per thousand gallons on municipal water delivered to customers. Notably, though, “water delivered to a customer for resale is exempt from the tax.”<sup>43</sup>

In Maine, advocates of such a measure pressed in 2004 for a 20-cent per gallon tax on water extracted for the purpose of sale as bottled water. This proposal was not enacted into law, with former governor Baldacci saying that he recognized Poland Spring water company, the

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<sup>37</sup> Organization of American States, Foreign Trade Information System, “NAFTA Chapter 11,” accessed March 2, 2011, <http://www.sice.oas.org/trade/nafta/chap-111.asp>

<sup>38</sup> Government of Canada, Depository Services Program, “Water Exports and the NAFTA,” last modified February 10, 2002, accessed March 2, 2011, <http://dsp-psd.pwgsc.gc.ca/Collection-R/LoPBdP/EB/prb995-e.htm>

<sup>39</sup> Government of Canada, Policy Research Initiative, Sustainable Development Briefing Note, “Is Water a Tradable Commodity,” January, 2007, accessed April 12, 2011, [http://www.policyresearch.gc.ca/doclib/BN\\_SD\\_WaterTradable\\_200701\\_e.pdf](http://www.policyresearch.gc.ca/doclib/BN_SD_WaterTradable_200701_e.pdf)

<sup>40</sup> World Trade Organization, “European Communities – Measures Concerning Meat and Meat Products”, accessed March 2, 2011, [http://www.wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds26\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds26_e.htm)

<sup>41</sup> United States Energy Information Administration, “Taxes on Crude Oil Production,” accessed April 5, 2011, [http://www.eia.doe.gov/pub/oil\\_gas/petroleum/analysis\\_publications/oil\\_market\\_basics/price\\_taxes.htm](http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/oil_market_basics/price_taxes.htm)

<sup>42</sup> National Conference of State Legislatures, “State Revenues Energy Update,” June, 2008, accessed April 5, 2011, <http://www.ncsl.org/default.aspx?tabid=12674>

<sup>43</sup> Arizona State Legislature, Revised Statutes, Title 42 – Taxation, Chapter 5, Article 7 – Tax on Water Use, accessed April 12, 2011, <http://www.azleg.gov/FormatDocument.asp?inDoc=/ars/42/05302.htm&Title=42&DocType=ARS>

largest in the state, as an important business and employer, and did not wish to jeopardize their relationship.<sup>44</sup> In 2011, a bill that would impose a penny-per-gallon tax is being considered in the Maine Legislature.<sup>45</sup> Advocates say it is necessary to provide the citizens a return on the use of their resources, and to decrease other taxes, while Poland Spring says the cost will be equivalent to one-fifth of its annual payroll and would threaten jobs.

In Florida, former Governor Crist proposed a water severance tax in 2009, but that and a subsequent effort led by a state legislator in 2010 both failed due to unwillingness on the part of the leadership in the state legislature, and because of stiff opposition from industry groups, namely Nestle Water North America, which also owns Poland Spring.<sup>46</sup>

Many countries do impose such a tax. Baden-Wurttemberg was the first German state to institute a water extraction fee, and now all other German states have either implemented similar policy or have pending legislation.<sup>47</sup> In Holland, the government had a main goal of raising revenue, but also a secondary aim of addressing environmental impacts from groundwater use. Groundwater provides roughly 70% of the drinking water, and is generally less expensive to get at. Therefore, the government attempted to incentivize the use of surface waters, such as water from rivers, for drinking water by placing a tax of .1785 Euros per square meter on extraction of groundwater. This has somewhat evened the distribution of drinking water between the two sources.

A study by the Policy Research Initiative of the Canadian government found that the competitiveness of Dutch industry was not significantly affected by the tax, and that industrial use of water had in fact dropped by somewhere between 2 and 12 percent.<sup>48</sup> This study also looked at the case of Denmark, which imposed a tax of .7 euros per square meter of groundwater volume. It found that this reduced the household use of water. Denmark exempts industry from the tax, and both countries exempt agriculture. According to the study, rates in France, England and Germany do raise revenue, but were deemed to be too low to change behavior, ranging from between .00071 to .006 euros per square meter.<sup>49</sup> The Pacific island of Fiji has announced in November, 2010 that it planned to raise its water extraction tax

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<sup>44</sup> U.S. Water News, "Group Plans water-extraction tax, asks state support," August, 2010, accessed April 5, 2011, <http://www.uswaternews.com/archives/arcpolicy/4grouplan8.html>

<sup>45</sup> Ann Kim, "Poland Spring feels the heat in Augusta State House: Hearings focus on water tax, corporate rights," March 11, 2010, accessed April 12, 2011, [http://www.pressherald.com/archive/poland-spring-feels-the-heat-in-augusta\\_2009-05-04.html](http://www.pressherald.com/archive/poland-spring-feels-the-heat-in-augusta_2009-05-04.html)

<sup>46</sup> Brett Ader, "Lawmakers resurrect proposal to tax bottled water," *The Florida Independent*, December 7, 2010, accessed April 5, 2011, <http://floridaindependent.com/16317/lawmakers-resurrect-proposal-to-tax-bottled-water>

<sup>47</sup> International Institute for Sustainable Development, "Water Taxes in Germany," accessed April 5, 2011, <http://www.iisd.org/greenbud/germany.htm>

<sup>48</sup> Government of Canada, Policy Research Initiative, Sustainable Development Briefing Note, "Do European Water Abstraction Taxes Affect Competitiveness," March, 2005, accessed April 13, 2011, [http://www.policyresearch.gc.ca/doclib/BN\\_SD\\_EuroWater\\_200503\\_e.pdf](http://www.policyresearch.gc.ca/doclib/BN_SD_EuroWater_200503_e.pdf)

<sup>49</sup> University College Dublin, School of Geography, Planning and Environmental Policy, Economic Instruments in Environmental Policy, "Groundwater Extraction Tax (Netherlands)," accessed April 5, 2011, <http://www.economicinstruments.com/index.php/water/charges-and-taxes/article/179>



from one-third of a cent per liter to 15 cents per liter, prompting FIJI water to suspend its operations in the country.<sup>50</sup>

### Conclusion

Ground water extraction remains an issue among communities throughout the world, as they continue to develop policies that consider water either as a public good or commodity. However, the prevailing trend amongst all state legislation reviewed in this report is that water is a valuable public resource and it must be protected and managed to ensure its value in the future. The status of groundwater in the context of international trade remains unclear. NAFTA and WTO rules provide for the highly-unregulated flow of goods between states.<sup>51</sup> Accordingly, it is possible that beverage corporations could use them to maintain unbridled commercial access to groundwater, even in the face of potential national and state legislation that attempts to bar such access. Taxation of water extraction, either to mitigate environmental harms or provide revenue, has proven to be a popular measure among many European countries, however this measure has largely failed to gain traction in the United States.

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Disclaimer: This report has been compiled by undergraduate students at the University of Vermont under the supervision of Professor Anthony Gierzynski. The material contained in the report does not reflect the official policy of the University of Vermont.

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<sup>50</sup> Anna Lenzer, "Fiji Water Announces Shutdown. World Freaks?", *Mother Jones*, November 29, 2010, accessed April 5, 2011, <http://motherjones.com/environment/2010/11/fiji-water-announces-shutdown-world-freaks>

<sup>51</sup> Organization of American States, Foreign Trade Information System, "NAFTA Chapter 11," accessed March 2, 2011, <http://www.sice.oas.org/trade/nafta/chap-111.asp>