

## Chapter 7

# Water Governance in the Context of IWRM: Switzerland

**Abstract** This chapter outlines the work completed for the ACQWA project on the governance assessments for the Chilean and Swiss case area and is used to provide vital background to the water governance situation and challenges in the Swiss case area. In the Swiss case, despite the fulfilment of accountability, transparency and participation indicators, the assessment suggested that there is a significant gap between the conceptual strands of IWRM in federal laws and policies and their translation at the regional and local levels. The complex institutional framework, legislative provisions and levels of sovereignty which govern water resources in the Canton Valais implied a lack of coordination and long term planning amongst the different politico administrative levels and sector groups. These challenges are linked to concerns that the ramifications of climate change and expanding water uses are not adequately reflected in the current governance framework.

**Keywords** Rhône, Canton Valais, Switzerland • Water governance assessment • Legislative and policy challenges • IWRM • Sectoral and subsidiarity challenges

### 7.1 Introduction to the Assessment

The STRIVER/BRAHMATWINN governance assessment represents a systematic methodology to measure governance in the specific context of IWRM, which has been applied in a number of basins within Portugal, Spain, Vietnam and India as part of the STRIVER ([www.striver.no](http://www.striver.no)) and BRAHMATWINN ([www.brahmatwinn.uni-jena.de/](http://www.brahmatwinn.uni-jena.de/)) projects (Allan et al. 2007). Its application in the Rhône Basin in the Valais, Switzerland and the Aconcagua Basin in Chile provides a baseline assessment of the governance context as it specially relates and addresses water governance in river basins.

The indicator approach to water governance is based on three core elements of good governance:

- **Accountability:** holding governments responsible for their actions; contestability of political power.
- **Transparency:** right to information; availability and clarity of information.
- **Participation:** involvement of citizens in decision making.

A comprehensive set of indicators was developed in the style of a questionnaire comprising 18 key questions, and 60 sub-questions testing both commitment (degree to which the governance context adheres to accepted standards of good governance) and process (extent to which this governance context is implemented in reality) (Allan and Rieu-Clarke 2007). The methodology provides a tool to assess existing laws, policies and formal institutions as well as how the relevant governance arrangements have been implemented in practice. The output provides an important benchmark for identifying potential gaps and barriers to implementing IWRM (Rieu-Clarke et al. 2008, p 2) and baseline from which to better understand core governance mechanisms that may affect adaptive capacity in water governance arrangements. Research was conducted initially through a desktop study to gather all relevant information on the laws as well as policies and institutions related to governance and IWRM. Interviews then ascertained the degree to which the law has been implemented. The following chapters provide an overview of the findings from the governance assessments, as a useful baseline from which to move deeper into the adaptive capacity assessment work that will be presented in Part III.

## 7.2 Swiss Water Governance Assessment

There are a number of laws with water elements at both the federal and cantonal level in Switzerland as shown in Table 7.1. The main federal provisions for property rights concerning water are set out in the Swiss Civil Code (CC) 664, 704 and 705. If a deed holder wishes to use these waters, they are required to follow federal law governing use and protection. Public property is deemed as rivers, streams, lakes, glaciers, as well as springs arising from uncultivable land. However, in Switzerland, federal provisions refer or imply additional cantonal legislation, which differs across the cantons, some of which have not passed additional regulation at all. In Valais, a more decentralised canton, while the lateral rivers of the Rhône are property of the communes, the Rhône itself is the property of the canton.

### 7.2.1 *Accountability*

Switzerland represents a direct democratic system and high level of decentralisation for decision making and planning. The primary system to challenge laws is through its citizens' constitutional rights to petition (FC Art. 33), initiative and referendum

**Table 7.1** Legal provisions concerning water and environment in Switzerland

English	Source/Original Text
<i>Section 1: Federal level</i>	
Federal Constitution (see below)	Bundesverfassung der Schweizerischen Eidgenossenschaft (BV), 2000, SR 101, <a href="http://www.admin.ch/ch/d/sr/sr.html">http://www.admin.ch/ch/d/sr/sr.html</a>
Swiss Civil Code (see below)	Schweizerisches Zivilgesetzbuch (ZGB), 1912, SR 210, <a href="http://www.admin.ch/ch/d/sr/c210.html">http://www.admin.ch/ch/d/sr/c210.html</a>
Federal Judiciary Act	Bundesgerichtsgesetz (BGG), 2007, SR 173.110, <a href="http://www.admin.ch/ch/d/sr/c173_110.html">http://www.admin.ch/ch/d/sr/c173_110.html</a>
Federal Administrative Procedure Act	Verwaltungsgerichtsgesetz (VGG), 2007, SR 173.32, <a href="http://www.admin.ch/ch/d/sr/c173_32.html">http://www.admin.ch/ch/d/sr/c173_32.html</a>
Federal Law on the Principle of Administrative Transparency (LTrans)	Bundesgesetz über das Öffentlichkeitsprinzip der Verwaltung (BGÖ), 2006, SR 152.3, <a href="http://www.admin.ch/ch/d/sr/c152_3.html">http://www.admin.ch/ch/d/sr/c152_3.html</a>
Environmental Protection Act (EPA)	Bundesgesetz über den Umweltschutz (USG), 1985, SR 814.01, <a href="http://www.admin.ch/ch/d/sr/c814_01.html">http://www.admin.ch/ch/d/sr/c814_01.html</a>
Protection of Nature and Landscape/ Cultural Heritage Act (PNLA)	Bundesgesetz über den Natur- und Heimatschutz (NHG), 1967, SR 451, <a href="http://www.admin.ch/ch/d/sr/c451.html">http://www.admin.ch/ch/d/sr/c451.html</a>
Water Protection Act (WPA)	Bundesgesetz über den Schutz der Gewässer (GSchG), 1992, SR 814.20, <a href="http://www.admin.ch/ch/d/sr/c814_20.html">http://www.admin.ch/ch/d/sr/c814_20.html</a>
Environmental Impact Assessment (EIA)	Verordnung über die Umweltverträglichkeitsprüfung (UVPV), 1989, SR 814.011, <a href="http://www.admin.ch/ch/d/sr/c814_011.html">http://www.admin.ch/ch/d/sr/c814_011.html</a>
Federal Fishing Act (FA)	Bundesgesetz über die Fischerei (BGF), 1994, SR 923.0, <a href="http://www.admin.ch/ch/d/sr/c923_0.html">http://www.admin.ch/ch/d/sr/c923_0.html</a>
Federal Land Planning Act (FPA)	Bundesgesetz über die Raumplanung (RPG), 1980, SR 700, <a href="http://www.admin.ch/ch/d/sr/c700.html">http://www.admin.ch/ch/d/sr/c700.html</a>
Federal Forest Act (FFA)	Bundesgesetz über den Wald (Waldgesetz, WaG), 1993, SR 921.0, <a href="http://www.admin.ch/ch/d/sr/c921_0.html">http://www.admin.ch/ch/d/sr/c921_0.html</a>
Ordinance on the Cleanup of Contaminated Sites	Verordnung über die Sanierung von belasteten Standorten (Altlasten-Verordnung, AltIV), 1998, SR 814.680, <a href="http://www.admin.ch/ch/d/sr/c814_680.html">http://www.admin.ch/ch/d/sr/c814_680.html</a>
Use of Water Power Act (UWPA)	Bundesgesetz über die Nutzbarmachung der Wasserkräfte (Wasserrechtsgesetz, WRG), 1918, SR 721.80, <a href="http://www.admin.ch/ch/d/sr/c721_80.html">http://www.admin.ch/ch/d/sr/c721_80.html</a>

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**Table 7.1** (continued)

English	Source/Original Text
Law on Hydraulic Engineering (i.e. management of waterways)	Bundesgesetz über den Wasserbau, 1991 (WBG), 1993, SR 721.100, <a href="http://www.admin.ch/ch/d/sr/c721_100.html">http://www.admin.ch/ch/d/sr/c721_100.html</a>
Ordinance on Environmentally Harmful Substances	Verordnung zur Reduktion von Risiken beim Umgang mit bestimmten besonders gefährlichen Stoffen, Zubereitungen und Gegenständen (Chemikalien-Risikoreduktions-Verordnung, ChemRRV), 2005, SR 814.81, <a href="http://www.admin.ch/ch/d/sr/c814_81.html">http://www.admin.ch/ch/d/sr/c814_81.html</a>
Polluter Pays Principle	Bundesverfassung der Schweizerischen Eidgenossenschaft (BV), 2000, SR 101, <a href="http://www.admin.ch/ch/d/sr/sr.html">http://www.admin.ch/ch/d/sr/sr.html</a>
Precautionary Principle	Schweizerisches Zivilgesetzbuch (ZGB), 1912, SR 210, <a href="http://www.admin.ch/ch/d/sr/c210.html">http://www.admin.ch/ch/d/sr/c210.html</a>
Principle of Sustainable Development	Bundesgerichtsgesetz (BGG), 2007, SR 173.110, <a href="http://www.admin.ch/ch/d/sr/c173_110.html">http://www.admin.ch/ch/d/sr/c173_110.html</a>
<i>Section 2: Federal Constitution</i>	
Bundesverfassung der Schweizerischen Eidgenossenschaft (2000), SR 101 is available on the website of 'Die Bundesbehörden der Schweizerischen Eidgenossenschaft': <a href="http://www.admin.ch/ch/d/sr/101/index.html">http://www.admin.ch/ch/d/sr/101/index.html</a>	
An English version of selected parts of the Federal Constitution is available at: <a href="http://www.servat.unibe.ch/icl/sz00000_.html">http://www.servat.unibe.ch/icl/sz00000_.html</a>	
Art. 2 Purpose, SR 101.2	[1] The Swiss Federation protects the liberty and rights of the people and safeguards the independence and security of the country. [2] It promotes common welfare, sustainable development, inner cohesion, and cultural diversity of the country. [3] It ensures the highest possible degree of equal opportunities for all citizens. [4] It strives to safeguard the long-term preservation of natural resources and to promote a just and peaceful international order.
Art.33 Right of Petition, SR 101.33	[1] Every person has the right to address petitions to authorities; no disadvantages may arise from using this right. [2] The authorities have to take cognizance of petitions.
Article 73 Sustainable Development, SR 101.73	The Federation and the Cantons are engaged to establish a durable balanced relationship between nature, particularly its renewal capacity, and its use by human beings.

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**Table 7.1** (continued)

English	Source/Original Text
Art. 74 Environmental Protection, SR 101.74	<p>[1] The Federation adopts rules on the protection of human beings and their natural environment against harmful or irritating effects.</p> <p>[2] The Federation provides for the fact that such effects are avoided. The costs of such avoidance and removal carry the causers.</p> <p>[3] The execution of the regulations falls to the Cantons, as far as the law does not reserve it for the Federation.</p> <p>This clause is further supplemented by other environmental decrees such as the Ordinance on: Environmentally Harmful Substances (9th June, 1986), which provisions that the law should protect men, animals and plants from harmful or long lasting impacts from harmful substances on their communities, living space or environment.</p>
Art. 76 Water, SR 101.76	<p>[5] On rights concerning international water resources and therewith connected duties</p> <p>[6] In the fulfilment of its tasks</p>
Art. 138 Right to Popular Initiative for a Total Revision of the Federal Constitution, 2003, SR 101.138	<p>[1] 100,000 eligible voters can suggest a total revision of the Federal Constitution from 18 months of the public launch of their Initiative.</p>
Art. 139 Right to Popular Initiative for a Partial Revision of the Federal Constitution, 2009, SR 101.139	<p>[1] 100 000 eligible voters can request a partial revision of the Federal Constitution 18 months from the public launch of their initiative.</p>
Art. 140 Right to Referendum, 2003, SR 101.140	<p>[1] The population and states are call to vote on:</p> <ul style="list-style-type: none"> <li>(a) a change to the Federal Constitution</li> <li>(b) the entry to organisations of collective security or to super-national communities.</li> <li>(c) urgently declared federal laws, which have no constitutional foundations and have exceeded their: 1 year period of validity; these federal laws must be submitted to a vote within 1 year from when they were taken on through the federal convention.</li> </ul> <p>[2] The population are called to vote on:</p> <ul style="list-style-type: none"> <li>(a) popular initiatives for a total revision of the Federal Constitution</li> <li>(b) popular initiatives for a partial revision of the Federal Constitution in the form of a general challenge, which was rejected by the federal convention.</li> <li>(c) questions on whether a total revision of the Federal Constitution is to be put into effect, where there is disagreement between both councils.</li> </ul>

(continued)

**Table 7.1** (continued)

English	Source/Original Text
<p><i>Section 3: Swiss Civil Code (1912)</i>            SR 210, Schweizerisches Zivilgesetzbuch            (ZGB) <a href="http://www.admin.ch/ch/d/sr/c210.html">http://www.admin.ch/ch/d/sr/c210.html</a></p>	
<p>Art. 664            Public</p>	<p>Abandoned sites and the property of the public domain are subject to state policing on the territory on which they are located.</p> <p>In the absence of evidence to the contrary, public water bodies, as well as regions unsuitable for cultivation, boulders, masses of fallen rocks, névés (firms), glaciers and their springs shall not be considered private property.</p> <p>Cantonal legislation regulates those things which are free, such as the exploitation of common use public properties, such as roads, open spaces, water courses and river beds.</p>
<p>Art. 704            Private</p>	<p>Springs are components of the property and can only be owned in conjunction with the ground from which they arise.</p> <p>The law of spring waters from external property is to be established as subservience through registration in the land register.</p>
<p>Art 709</p>	<p>Groundwater is on equal terms with spring waters. Cantonal legislation can reconcile use laws between neighbours or other persons, notably for the extraction of water, the watering of livestock, water sources, springs, and streams which are private property.</p>
<p>Art. 711</p>	<p>The title bearer of sources, springs or streams which are not useful for him, or which have an unreported use with their worth, is required to divest against full indemnity (with compensation?) for the drinking water services, hydrants or other public good services in general.</p>
<p>Art. 712</p>	<p>Title bearers of drinking water can demand the relinquishing of the surrounding ground, in the instance of expropriation, so far as the protection of their water sources against contamination is necessary.</p>
<p><i>Section 4: Legal provisions at the Canton level in the Valais</i>            A full listing of Cantonal Acts, Ordinances and Decision is available at: <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4609&amp;RefMenuID=0&amp;RefServiceID=0">http://www.vs.ch/Navig/navig.asp?MenuID=4609&amp;RefMenuID=0&amp;RefServiceID=0</a></p>	

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**Table 7.1** (continued)

English	Source/Original Text
Law on Hydraulic Engineering	Gesetz über den Wasserbau, 2007, 721.1, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4628&amp;Language=de&amp;RefMenuID=0&amp;RefServiceID=0&amp;link=">http://www.vs.ch/Navig/navig.asp?MenuID=4628&amp;Language=de&amp;RefMenuID=0&amp;RefServiceID=0&amp;link=</a>
Law on the Utilisation of Hydropower	Gesetz über die Nutzbarmachung der Wasserkräfte, 1990, 721.8, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4628&amp;Language=de&amp;RefMenuID=0&amp;RefServiceID=0&amp;link=">http://www.vs.ch/Navig/navig.asp?MenuID=4628&amp;Language=de&amp;RefMenuID=0&amp;RefServiceID=0&amp;link=</a>
Law on the Protection of Nature and Landscape/Cultural Heritage	Gesetz über den Natur- und Heimatschutz, 1998, 451.1, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0">http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0</a>
Canton Fishing Act	Kantonales Fischereigesetz, 1996, 923.1, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0">http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0</a>
Law on Official Surveys and Geoinformation	Gesetz über die amtliche Vermessung und Geoinformation, 2006, 211.6, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0">http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0</a>
Law on Agriculture and the Development of Rural Land	Gesetz über die Landwirtschaft und die Entwicklung des ländlichen Raumes (Landwirtschaftsgesetz), 2007, 910.1, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0">http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0</a>
Regulation concerning leisure cruising on motorboats on Valaisanne waterways	Reglement betreffend die motorisierte Vergnügungs- Schifffahrt auf den Walliser Wasserläufen, 1990, 747.201, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0">http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0</a>
Ruling concerning Drinking Water Installations/Facilities	Beschluss betreffend die Trinkwasseranlagen, 1969, 817.101, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0">http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0</a>
Ruling concerning the Use of Groundwater, Lakes or Waterways for Thermal Energy	Beschluss betreffend die Nutzung des Grundwassers, der Seen oder Wasserläufe zur Gewinnung thermischer Energie, 1982, 730.102, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0">http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0</a>
Ruling on the Draining of Dams and Reservoirs and the Purification of Waterways	Beschluss über die Spülungen, die Entleerungen von Stauanlagen und Speicherstollen und die Reinigung der Wasserläufe, 2002, 721.805, <a href="http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0">http://www.vs.ch/Navig/navig.asp?MenuID=4610&amp;RefMenuID=0&amp;RefServiceID=0</a>
Further provisions on water also exist in the laws and decisions concerning land protection: e.g. Entscheid betreffend den Schutz des Auengebietes Gletschboden sowie des Gletschervorfeldes des Rhône-gletschers in Oberwald (from 10 March 1999) ‘Decision concerning the Protection of glacial floodplains such as the glacial forefield of the Rhône Glacier in Oberwald’.	

(FC 138, 139, 140). A number of provisions are present in the Swiss federal constitution (FC), which guarantee access to legal proceedings and the courts (Arts. 29–33 and 64FC). Switzerland's judiciary is independent of the executive and the legislature, with the Federal Court (*Bundesgericht*) being generally viewed as being an effective and independent institution. Rights in legal and judicial proceedings for civil society as well as organisations are embedded in the FC as well as in a number of Federal Acts, namely, the Federal Judiciary Act (FJA), Federal Administrative Act, Environmental Protection Act (EPA) and the Federal Law on the Principle of Administrative Transparency (LTrans). The right of appeal for interested civil society/environmental organisations (*Verbandsbeschwerderecht*) to challenge decisions in court, which may affect their members' interest, was initially introduced in 1983 in the referendum on the EPA (Art. 55).

The complex governing process, while it ensures a consensus is built, does mean that laws can be difficult to implement, and the process of change or implementation is very slow and potentially difficult (Uhlmann Brögli and Wehrli 2008). In enforcing the law, the federal government tends to utilise a hands off approach, but can wield some form of soft enforcement power in terms of financial incentives and subsidies for the implementation of certain principles in projects at the canton and commune level. Under the terms of the *Neuefinanzausgleich* (NFA 2008), communes can receive greater subsidies for projects from the cantons and federal funds if they meet certain criteria (participative planning, integrated risk management, ecological aspects and technical aspects).

### 7.2.2 *Transparency*

Transparency indicators generally score well in the assessment, though issues were raised in terms of quality, quantity and coherence of certain hydrologic data set across regions, particularly in the Alpine areas. Despite Switzerland's reputation as the nation of banking secrecy, legal provisions for access to environmental information preceded those in the rest of Europe. In general, access to environmental information is perceived to work effectively in Switzerland, although concerns were raised with aspects of implementation in some of the more remote Alpine areas. The 30-day notification period was seen to be limiting when dealing with some communes that may be far away in the mountains, and/or adverse to environmental organisations, and therefore do not want to give them the report, no matter what rights are provided in the law to the Environmental Impact Assessment (EIA). Additionally, EIAs are outsourced to private bureaus, which can undermine the objectivity of the report. Instances where such bureaus simply do not know thoroughly the detail of the Water Protection Act (WPA), and mistakes are made in how the law should be interpreted and implemented, have also transpired. However, in the time period 1997–2007, there were no court cases or judicial proceedings relating to provisions for environmental information (Kölz and Brunner 2007).



### 7.2.3 Participation

Swiss citizens maintain extended political rights through the specific constitutional rights for referendum (Art. 140 FC), petition (Art. 33 FC) and initiation of a referendum (Arts 138 and 139 FC). These rights of participation are a fundamental part of the Swiss Constitution not only in law, but also in practice. Therefore, a large number of legislative acts in most policy fields are subject to referendum, requiring ratification by a majority of the electorate and the cantons. This also applies to water policy issues, allowing NGOs, trade unions and professional associations to exert a considerable influence on political decision-making processes (Mauch and Reynard 2002). The right to referendum and the resulting people's initiatives concerning water policy<sup>1</sup> (SFV 2006) show that public participation has been key in moving forward the ecological agenda in water governance in Switzerland. However, it has been well documented that since the 1970s, voter turnout has started to decline (IDEA 2009).

In the practice of water management, participation takes place at the different institutional rather than individual levels. Within the Valais, the implementation phase of the major flood protection project, the Third Rhône Correction (TRC), (Valais 2009) is highly participative, with the different segments of each project having its own local planning commission (*Commission régionale de pilotage*) that includes the different interested parties. However, the level of participation is highly dependent on local factors with inclusion and collaboration in some areas functioning very well, but not in other communes. Further difficulties have been detailed in the problems that arise from the participative process, namely in the slow progress of the project as well as in attempting to align conflicting interests, specifically agricultural stakeholders, who have set up a lobbying group to force the project to follow a more technical approach (Arborino 2009), and the environmental considerations bound by law (WPA) into the project. Other than the TRC, there are not that many other opportunities for participation or where participation is demanded.

### 7.2.4 IWRM

The sub-categories of the IWRM indicator suggest that while law and policy are certainly more integrated today and legal provisions for different element of IWRM are generally strong, complexity is high in that they are found in a number of separate federal and cantonal acts and ordinances.

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<sup>1</sup> 1991 Save our Waterways (*Volksinitiative: Zur Rettung unsere Gewässer*) and 2007 Living Waters – Renaturalisation Initiative (*Lebendiges Wasser – Renaturierungs-Initiative*). More information available in Sect. 9.6 (Appendix) at: <http://www.admin.ch/ch/d/pore/vi/vis164.html> and at [http://www.parlament.ch/d/suche/seiten/geschaefte.aspx?gesch\\_id=20070060](http://www.parlament.ch/d/suche/seiten/geschaefte.aspx?gesch_id=20070060) respectively.

### 7.2.4.1 Adopting a Basin Approach

Notably there is no framework agreement, convention nor cooperative institution for the Rhône basin as a whole. The River Rhône is the border between the cantons of Valais and Vaud, and is therefore shared 50:50 by each canton. There are federal and cantonal legislative clarifications for managing cross-cantonal waters (Ordinance on the Hydraulic Engineering, 2007), and generally, the Federal State is responsible for those water courses that flow across multiple cantons. However, the responsibility for implementation lies at the cantonal or commune level. The International Commission for the Protection of Lake Geneva (CIPEL; [www.cipel.org](http://www.cipel.org)) does provide a coordinating role for environmental protection across different cantons (Geneva, Vaud and Valais) as well as countries (Switzerland and France) affecting the quality of the Lake of Geneva.

In practice, issues of coordination amongst different communes over one basin are particularly problematic in Valais (Clivaz and Reynard 2008), since the communes have a large degree of autonomy, while the canton has low financial capacity. This decreases the canton's ability to implement federal legislation or a common hydropower policy (Staatsrat 2008) across different communes (Clivaz and Reynard 2008). Since all lateral rivers are under the sovereignty of the communes, some stakeholders suggested that it does not in fact matter what the canton says, as the communes have the end decision about how the water is used, and which projects are implemented. However, others commented that it is in their interests to comply to avoid litigation or losing out financially. Art. 7(3) WPA states that "the cantons provide a communal and where necessary a regional drainage plan (*regionale Entwässerungsplanung* (REP))", a provision only binding for built-up areas, but other aspects have to be included in spatial planning tools (*Sachplan* and *Richtplan*) (Heller 2009). However, very few cantons have completed an REP.

### 7.2.4.2 Water Allocation and Prioritisation Measures

There are currently no overarching principles on how to manage user conflicts in periods of water stress that address international, national and local actors all together. Provisions for allocation and prioritisation measures can be categorised into two groups: concessions and residual flows. Concessions are administrative agreements allowing exploitation of natural resources. For the exploitation of water power and irrigation, they are subject to the general provisions of the Use of Water Power Act (UWPA). The act provides regulations and guidelines for instances where water courses run through more than one canton (Arts. 6, 7, 61 and 68). In Valais, most concessions were granted by the communal administration for an 80-year time period and. Residual Flows (*Mindestrestwassermenge*) are provisions in both WPA (Arts. 31, 33, 34 and 36) and the Federal Fishing Act (FA), which require that sufficient quantities of water should be either left or returned to watercourses, whatever the water use.

While Swiss legal provisions recognise both economic and ecological water uses, implementation of these provisions has been difficult (Petitpierre 1999), as a 2006 *Eidgenössische Anstalt für Wasserversorgung, Abwasserreinigung und*

*Gewässerschutz* (EAWAG) study on the implementation of Art. 80 WPA shows (Uhlmann Brögli and Wehrli 2008). Interviews also suggested that it has led to increased challenges for how to best manage the different user groups, with the key issue being the development of the growing micro-hydro sector. There are very few provisions in the law that concern the management of scarcity situations and no overarching principles on how to manage user conflicts in periods of water stress that address international, national and local actors all together.

### 7.2.4.3 Protection of Aquatic Ecosystems

Aquatic ecosystems are protected in both qualitative (Art. 1 WPA) and quantitative (Arts. 29–36 WPA) terms through provisions in the WPA, as well as Protection of Nature and Landscape/Cultural Heritage Act (PNLA) and Federal Forest Act (FFA) (preservation of natural diversity of riparian species). Within the legislation of the Canton Valais, the Law on Hydraulic Engineering (LHE) (Arts. 5g and 39, 15 March 2007) provides protection of aquatic ecosystems, as does a 1999 law protecting the floodplain of the Rhône. In practice, a number of water courses and aquatic ecosystems have been severely impaired and federal targets are not being met (e.g. nitrate concentrations) (FOEN 2009a). Hydro-peaking regularly impacts rivers, while some periodically dry up from over extraction. Environmental lobby groups have expressed concern with the fact that the legally binding provisions for residual flows are too weak for effective nature protection (Bonzi 2009a), raising questions as to whether an effective and efficient instrument exists for coordinating water's protection and use (Bonzi 2009b). Enforcement of protection provisions are seen to be hampered by resource limitations in staff numbers at the canton level.

### 7.2.4.4 Flood Risk Management and Response Systems

Since the 1970s there has been a shift from technical building and a hard canalisation approach to a more integrated and eco-system based flood management philosophy (Zaugg 2002), which has meant that implementing flood protection projects (such as the TRC) requires a more complex negotiating process. While federal and cantonal law (WBG, Valais) state that the natural condition of the river must be improved, other stakeholder groups, such as agriculture, have rallied against the impacts this would have for their own resources. However, financing mechanisms are perceived to effectively assist the federal government in implementing current philosophy of the law. Recurring issues of sovereignty and capacity were raised in interviews across the cantonal departments. Hazard maps are a key requirement of the flood protection concept due for completion by the end of 2011. Progress is recorded in the ShowMe maps (FOEN 2009b). It was noted that better coordination across different departments was required to reduce duplication of effort (Fig. 7.1).

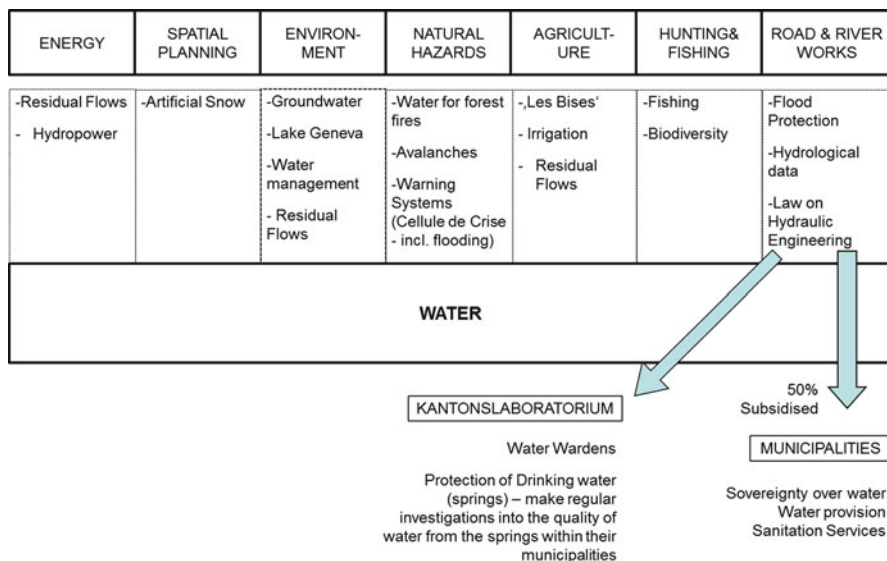


Fig. 7.1 Organigram of water resource management across Canton Valais

### 7.2.4.5 Institutional Arrangements and Challenges Related to IWRM

Swiss water management is driven from the local level up, thereby reducing the impact of IWRM policies proposed by FOEN at the cantonal and communal level. Organisations such as Wasser Agenda 21 (WA21) are more focused on the theory of IWRM, so have very little impact in practice. Despite policy briefs from FOEN (SAEFL 2002, 2003), so far there is no cooperative institution at the basin level in the Canton Valais or the Rhône basin in general, instead a complex and segregated approach (Fig. 7.1) makes coordination across the different actors difficult. There are many institutions that focus on the different elements of water, spread across the federal, canton and communal level, leading to weak internal policy coherence within the federal administration (Varone et al. 2002) and in the country as a whole.

Many interviewees raised the issue of professionalism and lack of capacity at the commune and canton level. Those responsible for a water management component often do not have the time, training or both. The autonomy from federal control (provided by Art. 50 FC) is another facet of the principle of subsidiarity and one that has significant consequences in water management (Aschwanden et al. 2008). It makes it particularly difficult to establish appropriate geographical units for water management, since their areas are too small to represent either natural or technical territorial units of water courses. Over the years each canton has developed their own brand of water management, along with their own institutions, leading to a lack of overall vision for Switzerland (Chaix 2008). Some question whether this

decentralised approach to water management is compatible with the goals of IWRM (Chaix 2008). While limited and independent examples of integrated watershed management have been documented across different cantons (WA21 2007), the ability for IWRM to move more comprehensively from theory to practise is yet to be seen.

### 7.3 Conclusion

Although Switzerland scores well on accountability, transparency and participation indicators, the assessment has shown that there is a significant gap between the conceptual strands of IWRM in federal laws and policies and their translation at the regional and local levels. In many instances, reality in implementation of more integrated principles of water related law is still divorced from commitments in federal and cantonal law. Most significantly, it shows that integrated watershed management has yet to be fully defined in Switzerland.

Key findings in the assessment can be grouped under the headings listed below:

- Sectoral approach & demarcation by political boundaries for water management
- Suitability of the ‘lowest possible level’ concept of subsidiarity & *Kantonligeist* Syndrome with ramifications for resource constraints at the municipal level
- Complexity of water sovereignty at different levels of government
- Conflicts on the Horizon: artificial snow, climate change, long term hydropower concessions, growth of micro-hydropower
- Balancing of protection and use provisions in the different laws concerning water

Swiss water law, although progressive, maintains a focus on sectoral and end of pipe regulation. To date, Swiss water management has been described as an over layering of more or less sectoral coordinated plans and management processes. The various tasks on the protection or use of water are often separate and administered in geographically very small areas (namely the communes). Most water associations are still organised by sector, and therefore management remains driven by sectoral interests. It has been commented that the decentralised approach to water management (with the duty of implementation designated to the communal level) is incompatible with the goals of integrated water resources management, and watershed management (Chaix 2008). Communes tend not to be able to establish appropriate geographical units for water management – most commune areas are too small to represent either natural or technical territorial units of water courses.

Furthermore, over the years each canton has developed their own brand of water management, along with their own institutions, leading to a lack of overall vision for Switzerland (Chaix 2008). An optimistic development has been the emergence of WA21, which recognises these issues and challenges and is attempting to implement its agenda to achieve a more sustainable and integrated approach to water management (WA21 2008). However, in the highly decentralised political climate

in Switzerland, national and federal programmes are often viewed with suspicion and are unwelcome at the local and regional level. While limited and independent examples of integrated watershed management have been documented across different cantons (WA21 2007), the ability for IWRM to move more comprehensively from theory to practise is yet to be seen.

The complex institutional framework, legislative provisions and levels of sovereignty which govern water resources in the Canton Valais imply a lack of coordination and long term planning amongst the different politico-administrative levels and sectoral groups. These issues impede the implementation of a more integrated water management framework. Future management should be far better coordinated at the watershed level, yet given the Swiss politico-administrative order, sole management at the watershed level is unlikely, since the logical political boundaries are the communes (Clivaz and Reynard 2008). In the past some communes in the Valais have shown interest in the creation of a Master Water Plan within the framework of the Environment and Health Action Plan (Clivaz and Reynard 2008). However, more recently the suggestion of the *Centre de Competence d'Eau Valais* is a positive development. At the time of interview, only an initial planning phase was underway, therefore the form and shape of the institution is yet to be seen. The extent to which it will embrace IWRM principles and make strides towards a basin approach management style is also yet to be seen.

The tendency to plan and manage water at the lowest political level implies a lack of oversight and raises questions as to what really is the 'lowest suitable level' in the principle of subsidiarity. The limitation of this concept therefore requires far closer investigation in the discourse on water governance in Switzerland. Resource and professionalism issues at local institutional levels were a source of concern, not just for current management issues, but in light of future challenges as well. Even in the Swiss Alpine region, where water is plentiful, multiple uses of water has caused a degree of stress in supply, due to the non-management of demand.

A further challenge is to create and integrate new institutions that can manage not only sectoral uses but also cross sector problems, within a climate of change. The lack of an oversight institution in the Rhône basin is a situation that may lead to issues amongst stakeholders (at local, regional and international levels) in the future. Other external factors such as the intensification of the energy market between Switzerland and Europe (Von Arx 2009) also raise questions as to the ability of such a devolved and un-coordinated governance setting to manage change and uncertainty.

Finally, there are concerns that the ramifications of climate change and expanding water uses are not adequately reflected in the current governance framework. Some have suggested that a lack of urgency to address this issue in an integrated manner and vision is due to fact that there has historically been a low level of pressure on water management in the region, and Switzerland in general (Heller 2009). However, even within the water tower of Europe, the prognosis of rising conflicting demands on a water system facing uncertain changes from climate impacts, suggest that it may be time for a change of speed.

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