



## Développement durable et territoires

Économie, géographie, politique, droit, sociologie

Vol. 14, n°2 | Octobre 2023

Que font les solutions fondées sur la nature aux politiques de gestion des risques liés à l'eau ?

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### Electronic version

URL: <https://journals.openedition.org/developpementdurable/22963>

DOI: [10.4000/developpementdurable.22963](https://doi.org/10.4000/developpementdurable.22963)

ISSN: 1772-9971

### Publisher

Association DD&T

Brought to you by Bibliothèque cantonale et universitaire Lausanne



UNIL | Université de Lausanne

### Electronic reference

Alexis Metzger and René Véron, ““Sustainable security” through river enlargements: A political ecology of nature-based solutions and flood control in the Rhone Valley, Switzerland”, *Développement durable et territoires* [Online], Vol. 14, n°2 | Octobre 2023, Online since 30 October 2023, connection on 22 November 2023. URL: <http://journals.openedition.org/developpementdurable/22963> ; DOI: <https://doi.org/10.4000/developpementdurable.22963>

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# “Sustainable security” through river enlargements: A political ecology of nature-based solutions and flood control in the Rhone Valley, Switzerland

*« Sécurité durable » par l'élargissement fluvial : Une political ecology de la gestion des inondations fondée sur la nature dans la vallée du Rhône en Suisse*

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- 1 Nature-based solutions (NBS) have become an increasingly popular approach of environmental management. They are inspired and supported by natural biophysical processes to mitigate against environmental disasters, and biodiversity conservation is an integral part of their objectives (Kotsila *et al.*, 2021). NBS are used to address both environmental and societal challenges: They are composed of “actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits” (Cohen-Shacham *et al.*, 2016).
- 2 Flood risk management, too, employs more and more nature-based tools (Challies *et al.*, 2016), as many river restoration and renaturation projects demonstrate. A major nature-based component of flood risk management is the enlargement of rivers. In Europe, water researchers agree that “sustainable flood management requires ‘making space’ for water by increasing retention capacity of floodplains” (Guerrin, Bouleau and Grelot, 2014: 2405). Nature-based approaches have also been used for flood risk management in Switzerland (Ejderyan, 2008; Kurth and Schirmer, 2014; Logar, Brouwer and Paillex, 2019).
- 3 The currently largest river training project in Switzerland, the so-called “Third Correction of the Rhone” (hereafter R3), builds on nature-based solutions through the

use of river enlargements for flood management alongside more traditional measures, such as the reinforcement of embankments or the deepening of the riverbed. According to the official planning document *Plan d'aménagement de la troisième correction du Rhône* (hereafter PA-R3) approved and published by the Canton of Valais (Vaud) in 2016, the project aims to protect 42,000 inhabitants currently at risk from a 100-year flood event, which could cause an estimated 10 billion Swiss Francs of damage (PA-R3, 2016: 15). Massive works are foreseen from 2016 to 2046 along the 160 km of the Rhone River from Oberwald to Lake Geneva, all of which lies in or borders the Canton of Valais. River enlargements are foreseen mainly outside inhabited areas while the lowering of the riverbed and the reinforcement of embankments are planned in urbanized areas.

- 4 The enlargement of the riverbed is the most discussed part of this river training project. On average, space for the river is to be expanded 1.6 times, threatening agricultural land close to the existing banks. While the current maximum width of the Rhone between its two dikes is between 85 and 125 meters, it will be between 128 and 193 meters in the near future (PA-R3, 2016: 22). The project is currently estimated to cost 3.6 billion Swiss Francs and is co-financed by the Swiss Confederation (covering more than 85% of the projected costs) and the cantons of Valais and Vaud.
- 5 The principles of NBS are reflected in the following quote from the official planning document: "The Third Correction of the Rhone, by the need to enlarge the river to guarantee the security of people and goods, will allow the Rhone to play a function as a biological corridor. Additional enlargements create possibilities for effective retention zones" (PA-R3, 2016: 12). However, the term "nature-based solutions" is neither present in this official document nor in public discourse. Instead, the term of *sécurité durable* ("sustainable security") is given prominence as a guiding principle<sup>2</sup>, and it is mentioned multiple times in the PA-R3 document. The apparent goal of R3 is to interlink security and environmental concerns.
- 6 This paper seeks to examine the concept of sustainable security in terms of its application in the R3 project and the related public debate in the Valais. We thereby emphasize the political dimensions because "managing flooding is a highly political issue, as it combines multiple strategic interests such as power, finances, and access to critical urban land and public infrastructures" (Bottazzi, Winkler and Ifejika Speranza, 2019: 179). In particular, this paper addresses the following research questions: (i) How are security and environmental concerns weighed against each other in R3? (ii) How are the relationships between the three pillars of sustainability (i.e., the environment (or ecology), the social and the economic) represented in the project? (iii) How has R3, particularly the idea of sustainable security, influenced the opportunities of the population to shape the territorial development of the Rhone Valley?
- 7 The two underlying concepts, security and sustainability, have been criticized by geographers and other social scientists. Security and insecurity may present themselves very differently to different populations despite a common source; and security measures applied to protect one group may increase insecurity or vulnerability among other groups (Philo, 2012). For example, the vulnerability associated with a 100-year flood in the Valais varies between different population groups, and the costs for flood management may not be shared equally.
- 8 Sustainability, in turn, has been criticized as a misused and ambiguous concept (Theys, 2020) with a focus on the relations between means and ends, efficiency and optimization that can lead to technocratic solutions and depoliticization (Felli, 2015).

Sustainability threats (e.g., floods, often framed as a matter of life and death, can foreclose democratic deliberation because the assumed urgency asks for quick intervention (based on expert advice) (Reghezza, 2015). Furthermore, processes that may appear deliberative, such as structured participation aiming to reach consensus within a given scope, are equally depoliticizing as they distract from more fundamental questions of resource allocation and socio-ecological, territorial transformation (Swyngedouw, 2014). The aim to provide security and reduce risk, as it is present in R3, can imply the protection of the status quo and hinder political debate on pathways to a more profound reorganization of a territory (Reghezza, 2015).

- 9 Despite these drawbacks, Theys (2020) maintains that the concept of sustainable development, if applied more rigorously and analytically, remains useful and has the advantage over recently proposed alternatives, such as resilience or transition, to be more encompassing. The examination of environmental projects can benefit from an analysis of synergies and trade-offs between the three pillars of sustainability (i.e., the environment (or ecology), the social and the economic) and the relationships between the needs of current and future generations, or intra- and intergenerational justice. For these reasons, and in order to evaluate R3 on its own terms, we attempt to use this framework analytically.
- 10 To politicize our sustainability analysis of R3, however, we also draw upon the approach of political ecology, which can be seen as “a kind of troublemaker, effectively adopting the role of a trickster” in a politicized reading of environmental projects (Robbins, 2015: 89-90). Political ecology highlights power relations and processes of domination and marginalization at the interstices of the biophysical environment and political economy. It considers diverse actors and their interest, as well as environmental narratives and discourses both underpinning and challenging engrained power relations (Benjaminsen and Svarstad, 2009). Political ecology is also cognizant of depoliticizing processes (Swyngedouw, 2014). In our case, a political-ecological reading of R3 implies the consideration of “the embedded nature of the socio-political and ‘more-than-human’ geographies shaping the production of floods” (Marks, 2019: 65), as well as fashioning the protection against floods. Floods and flood management evidently go beyond the riverbed. In this regard, we view the Rhone plain as a “hydrosocial territory” (Flaminio, Rouillé-Kielo and Le Visage, 2022) “where divergent socio-environmental imaginaries are generated and contested” (Duarte-Abadía and Boelens, 2016: 16).
- 11 After this introduction, we briefly describe the methodology on which this paper is based in Section 1. The empirical part is divided in three sections that largely correspond to the research questions. We show how the security argument is highlighted to justify R3 (Section 2), how the ecological, economic and social dimensions of sustainability relate to each other in the river training project (Section 3), and to what extent it allowed political deliberation. In Section 4, we conclude that the concept of sustainable security foreclosed more substantive discussion on the sustainable territorial development of the Rhone Valley.

## 1. Methodology

- 12 Our examination of the concept of sustainable security in relation to the R3 and the associated public debate in the Valais draws upon two main data sets. The first contains

primary empirical material from 25 stakeholder interviews. We selected respondents from the region near Sion, the capital of the Valais, who were involved in the R3 process in different ways, as politicians, technocrats, representatives of interest groups, etc. In a first step, we contacted public figures who were known to be implicated with R3. Then, we applied the snowballing method to identify additional interviewees. The purposive sample includes nine elected officials representing different political parties (three municipal councilors, two mayors, three members of the cantonal parliament, and one member of the national parliament); three government employees (two technical officers of the canton, one federal environmental engineer); five stakeholders from different economic sectors; one representative of an ecological NGO; and seven other people with interests in R3.

- 13 The interviews between 2019 and 2020. Most of them took place face-to-face but some of them were conducted by Zoom because of COVID. The conversations were held in French. The interviews have been recorded except for three of them (one due to technical problems and two due to the refusal of respondents). We also took notes and went back to recordings for direct quotes, some of which are reproduced in this paper (through our own translation). The interviews were analyzed for their content regarding the politics and power relations around R3, but also for their narratives that reveal particular socio-environmental imaginaries for the Rhone and its plain.
- 14 The second data set consists mainly of the above-mentioned, 96-page official development plan of the Third Rhone Correction (PA-R3, 2016), produced by the Cantonal Office of the Construction of the Rhone, which is responsible for the implementation of R3. We conducted qualitative content analysis of the document looking for text passages that are linked to security, as well as environmental, social and economic sustainability. We also carried out simple discourse analysis paying attention to the choice, associations and frequency of selected key terms. This analysis was complemented by the review of other official documents, websites and the scientific literature to discern the political processes related to R3 and even the production of the official plan (PA-R3).

## 2. Primacy of the security motive

- 15 As already mentioned, R3 aims to protect the Rhone plain, its inhabitants and infrastructure against a 100-year flood event. The PA-R3 document mentions the term "security" 97 times, including on the title page and right at the beginning of the document in the problem framing: "a serious safety deficit" (p. II of the summary) and "clear signs of insufficient security" showcased by "a succession of recent disasters" (p. 1 of the main text). However, the authors point out that the intended protection cannot be absolute: *"The construction of the Third Rhone Correction brings an enormous gain in security with regard to flooding. However, absolute safety is neither technically nor financially feasible. Regardless of the level of protection, extreme events can overload the system and cause flooding. This residual risk is considered for very rare floods that are significantly higher than the Q100 target or the October 2000 flood"* (PA-R3, 2016: 55).
- 16 Most of our interviewees concurred that the security component of the project is primordial. For example, a tourism promoter stated: *"I feel pretty safe in what is in place now. [But] one of R3's objectives is to find more security for the population."* Two farmers agreed: *"The Third Correction is useful in terms of security/safety. No one disputes that."*

According to a former journalist at the *Nouvelliste*, the main local newspaper in the Valais, the notion of security is also put forward for political reasons: *"To accept this project, the criterion of security is crucial. Without the word security, no one would want to hear about this Third Correction. This perception of the river as a threat, human beings have it... some amplify it... without the security dimension, there would have been no majority... in this sense, security is crucial."*

- 17 Some interviewees referred to environmental concerns more specifically. For example, a member of the cantonal parliament pointed to the importance of linking biodiversity and safety concerns to find a political majority for the river training project. A representative of an environmental NGO emphasized the political importance of environmental arguments more strongly: *"There is security. But I see [R3] more as a way to promote biodiversity. And then, [it has] a role to invite the population to the places to which it can go on the weekend. [R3] is value added at all levels."*
- 18 The opposition to R3 in the 2010s (see section 4.2) pointed out the loss of agricultural land through river enlargements. Opponents pitted the environmental objectives of R3 against agricultural development. One biologist told us that there was *"a focus on nature and agriculture.... On the one hand, [there was] the NGOs that said the project is not ambitious enough.... [They] wanted 1,100 hectares today and 2,000 hectares in the future [for environmental conservation].... On the other side, agriculture did everything to reduce to the project to the security aspect...."* But when the debate on the loss of agricultural land became heated, environmental organizations started to keep a lower profile in the political discussions on R3, probably for tactical reasons. For example, WWF abandoned an awareness-raising project showcasing the natural dynamics of the Rhone.
- 19 In the following, the environmental dimensions of R3 were somewhat side lined mainly because of the discretion of the environmental organizations. To go up against the organized opposition to R3, formed by a group of farmers and supported by the Swiss People's Party, the safety argument was put forward and became prominent (to the detriment of the environmental argument). To counter the arguments of the farmers, who found some strong support in the population, the security discourse was more promising than the environmental narrative (Utz, 2017: 189). The intervention by a Green Party politician in the cantonal parliament on 9 December 2014 during a debate on the financing of R3 bears witness to the downplaying of environmental issues: *"Yes, safety and economic issues are important. So are ecological aspects. The quality of the landscape, the environment and biodiversity should not be taboo."*

### 3. Three pillars of sustainability of the Third Correction

- 20 R3 is a complex and multifunctional project that claims to have sustainability at its core. In the PA-R3 report, the terms "sustainable" (*durable*) and "sustainability" (*durabilité*) appear 105 times, but only once in form of "sustainable development" (*développement durable*), i.e., *"The protection against natural disasters is a fundamental condition for sustainable development and the prosperity of a society"* (PA-R3: 18). The three pillars of sustainability are somewhat reflected in the official objective *"to contribute to the overall conditions for the development of the plain by a redevelopment of the Rhone that guarantees the functions of the river (security, environment, socioeconomic aspects) in a sustainable manner."* (PA-R3: 20). However, the PA-R3 does not explicitly define the terms "sustainable", "sustainability" or "sustainable development". Yet, it states that

R3 provides "future generations" (2 mentions) choices and protects them from high costs of a 100-year flood. Sustainable flood management has been more explicitly defined in the case of Scotland, for example, as providing "... the maximum possible social and economic resilience against flooding, by protecting and working with the environment, in a way which is fair and affordable both now and in the future" (Werritty, 2006 : 19).

### 3.1. Environmental Sustainability

- 21 R3 highlights the environmental pillar of sustainability. This is reflected in the PA-R3 which mentions the terms "environment", "environmental", "ecology", "ecological" 92 times. An "ecological deficit" is identified as a key problem in the summary right at the beginning of the PA-R3 (2016: II): *"For example, aquatic habitats are impoverished and make the development of fish, which are typical for an Alpine river, such as the Rhone, impossible. The natural habitats along the banks of the Rhone are also impoverished and fragmented."* The ecological dimensions of R3 are outlined in a separate section that starts with the definition of goals: *"The Rhone should ensure several important natural functions: it should host aquatic life, including that of the riverbanks, and ensure the connection of natural milieus and the purification of water"* (PA-R3: 11). The principal measure to achieve these ecological goals is the widening of the river.
- 22 It is still much debated what importance the ecological dimensions should have for R3. Furthermore, the definition of what the "environment" represents in the project is subject to controversy. Two interviewed farmers, for example, do not share the official conception of the environment that focuses on ecology and biodiversity in the riparian zone. They see the enlargement of the Rhone as an "environmental disaster": *"In the Rhone plain, there is the most fertile land in terms of yields, early ripening of fruit, and crop variety. With the 800-hectare enlargement [of the riverbed], we will destroy a resource that is not renewable. The groundwater table is contaminated.... R3 is an energetic money pit, a means of polluting the groundwater. Without any environmental value whatsoever, [R3] will just produce negative effects..."*
- 23 This understanding of the environment seems broader; the interviewees' reference to contamination is linked to industrially polluted sediments that have become mobile as a consequence of river enlargement near the town of Visp in 2018. Furthermore, the establishment of recreational areas near the Rhone thanks to R3 could also be interpreted as an environmental improvement, but PA-R3 refers to landscape development as a socioeconomic rather than environmental issues (see below).

### 3.2. Economic and social sustainability

- 24 The economic and social pillars of sustainability are clubbed together as "socioeconomic issues" in PA-R3 and given a bit less weight than ecological concerns. The terms "socioeconomic" or "socio-economy" appear 29 times, "economy" or "economic" 54 times, and "social" and "society" only six times. PA-R3 does not define the current economic and social aspects related to the Rhone as a key problem and motivation for R3. However, the economic component of the project is important, particularly because R3 will secure existing, as well as enable new, building zones. Currently located in high-hazard zones, some areas will become constructible once the

flood-protection measures have been carried out. This will allow more housing, and businesses to expand and generate jobs. Secondly, PA-R3 admits that agriculture will be affected by the river enlargement, but it states that R3 aims to minimize the loss of the most fertile lands. Furthermore, these economic losses would be offset by general regional development and individual farmers will get compensation for lost land. Thirdly, the river itself could become a resource for the economy, particularly through its hydroelectricity potential. Although three possible projects are mentioned, PA-R3 remains vague on this point: *"Potential synergies between electricity production and the Third Rhone Correction have been identified and are being developed"* (PA-R3, 2016: 13). An interviewee added: *"Who knows if the Rhone will also be an economic lung. Why not gain energy through this river and give it importance?"*

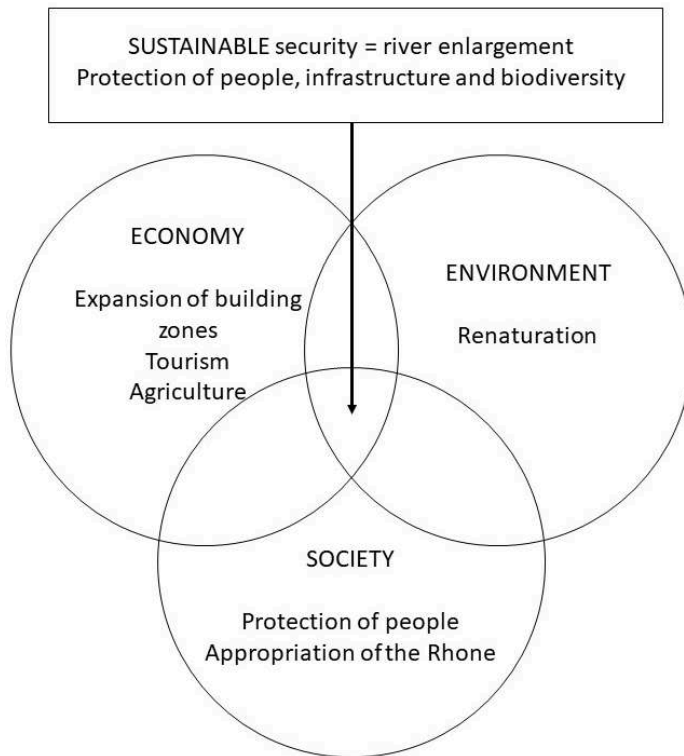
- 25 The social aspect of R3 has emerged most recently and is arguably the weakest pillar. There are only single references of society-river relations and the social appropriation of the riverbanks in PA-R3. The social aspect of R3 is mostly framed in terms of landscape (41 mentions). In this regard, the project of the Rhone Nature Park is noteworthy. Several interviewees have the expectation that the banks of the Rhone will become a pleasurable area that can be used for recreational purposes.
- 26 In this sense, R3 offers possibilities for the population to reconnect with their hydrosocial territory and make it their own. Indeed, the straightened and canalized Rhone made it difficult to see this river as a heritage site, as an engineer told us. A former journalist elaborated: *"As a young person, as a teenager, the river seemed completely invisible to me. (...) When I came to the plain, the river was hidden behind rows of trees, between the cantonal road and the motorway, between large dikes. This river never seemed to be important to me. In the history of the canton, it was rarely mentioned."* However, these and other interviewees expressed a desire to make the Rhone part of Valais identity. A tourism promoter, for example, remarked: *"In recent years, Valais Tourism [the cantonal tourism office] has always been oriented towards the mountains with winter tourism - not towards the plain. But the tourist potential of the plain is there. We need to give back the Rhone to nature and make the plain more attractive."* In sum, our interviews suggest that R3 may contribute to a change in geographical identities in the Valais, a move beyond the imaginary of the Valais as mountainous to include positive, identifying images of its plain.

### 3.3. Synergies and tradeoffs

- 27 The three pillars of sustainability are intertwined in a complex way in flood management creating both synergies and tradeoffs. For instance, "quantifying social needs, delivering 'fair outcomes for everyone' and balancing environmental gain with economic costs (possibly including foregone employment opportunities) are objectives that are sometimes difficult to reconcile" (Werritty, 2006: 22). Figure 1 illustrates the three pillars of sustainability in the case of R3 and their interrelations.



Figure 1. Complex relationships between the three pillars of sustainable security



- 28 For example, renaturation seems to go hand in hand with social appropriation in R3. As a city councillor from the plain said: *“You can ride your mountain bike on the riverbank but it's not maintained. People like everything that is covered in vegetation. We have to renature things.”* However, other objectives, such as renaturation through river widening and agricultural development, seem to have a more antagonistic relationship. There are also tradeoffs within particular pillars, for example between the expansion of building zones and agricultural development.
- 29 Furthermore, the spatial relationship of ecological, social and economic uses still remains undefined, both in the PA-R3 and in the representations of the interviewed actors. The relationship between the territorial development of the river and of the Rhone plain has not been specified, so that regional development often appears as an afterthought. As Utz noticed: *“The main aim of the project is to secure the plain against the flooding of the Rhone, but it is also intended for local development, particularly in terms of agriculture, the economy and tourism”* (Utz, 2017: 176).
- 30 For example, the space to be dedicated to nature versus recreational activities is still debated. A representative of an environmental NGO feared: *“What worries me ... is that the developments are mainly for relaxation – the risk of having bathers, kayakers everywhere – and that finally, nature will not have much space left.”* In this connection, the remark and questioning of an artist working in Sion are relevant: *“You have to choose what you are going to lose and what you are going to conserve. Keep natural spaces, left to nature (...) There are a lot of forests and areas for agriculture but not enough buffer zones for nature – open spaces. What proportion are we leaving to nature not controlled by man?”* One option being considered by the Rhone flood protection service is to leave one bank more natural while opening the other one to social appropriation and leisure activities (Marianne Gfeller, interviewed by the national radio station RTS 1, 23/04/2021).

## 4. (De-)politicization of the Third Correction

- 31 The Canton of Valais initiated discussions on a project to improve flood management in the Rhone plain and its parliament decided to consider embarking on the Third Correction in 2000. After several feasibility studies, consultations and intermediary political decisions, the project was approved in 2016. This section retraces the political processes related to R3 from the 2000s until today.
- 32 After the general go-ahead decided by the cantonal parliament, a technical steering committee directed by cantonal officers (mostly engineers) and supported by the Federal Office for the Environment was established to draft a comprehensive river training plan. Deliberations between experts and political representatives in government resulted in the first draft in 2008 that set the overall parameters of the project. The draft plan was then submitted to a consultation procedure (see below). However, "negotiations around the project focused mainly on the project's technical aspects, neglecting other issues and leading to a battle between one expert opinion and a second expert opinion" (Utz, 2017: 199). The overarching political process related to R3 thus seems to be one of depoliticization. For instance, technical debates on how to achieve sustainable security (and mitigate tradeoffs) stifled political discussions on the meaning and goals of sustainable development of the Rhone plain, echoing the point of Felli (2015) that environmental ideology based on sustainability can be depoliticizing through the recourse to technocratic decisions for the future of a society. The crisis framing in the report also drove an urgent search for measures to protect inhabitants and infrastructure from flood foreclosing wider questions on alternative development paths for the hydrosocial territory of the Rhone plain (cf. Reghezza, 2015).

### 4.1. Limited participation

- 33 Between 2008 and 2012, the planning process also included participatory elements, particularly in form of the so-called Regional Steering Committees (*Commissions régionales de pilotages*, COREPIL) that brought together the concerned municipalities and local representatives of economic and other interest groups. The COREPILs represented discussion forums for a range of actors from agriculture, fishing, industry, tourism and environmental protection, for example (Utz *et al.*, 2017). According to Utz *et al.* (2017), the participatory process was relatively substantial in the sense that it aimed to improve the project and did not just seek buy-in from influential stakeholders.
- 34 However, some of our interviewees expressed their disappointment with the consultation process leading up to the reformulation of the draft development plan for R3. A cantonal parliamentarian from of the Social-Democratic Party thought that it would have been necessary to include inhabitants more directly in the discussions instead of relying on representatives of interest groups. A councillor from a city in the plain was particularly critical: "*There was no forward thinking, no discussion with the locals. In Switzerland, we don't like what's coming from a top-down point of view. Even in the COREPIL, [the members] were faced with a fait accompli. In short, there were the COREPILs but [it was] one step forward and two steps back.*"
- 35 The opinions of the COREPILs (and of the desirability of their outcomes) differ widely. An interviewee, who himself was generally satisfied with the committees pointed to the

frustrations of others: *“There are people who are convinced that they have not been heard. The farmers. Since their alternative option [full reliance on river deepening] was not taken into account, there is enormous frustration. They refuse the model [of security through river enlargement]. It’s complicated. I hope that the engineers of the project will apply some flexibility and listen to [younger generations who have less engrained views].”*

- 36 The interviews point to some disaffection with the traditional top-down model of risk management “where the management problem is framed in terms of economic and technical rationality and the communication problem is viewed as informing or educating the public about risk as defined by the technical experts – of filling a knowledge gap” (Scolobig and Pelling, 2016: 10). They also indicate a relatively instrumental, depoliticizing form of participation aiming to foster public acceptance.
- 37 Nevertheless, at the end of the consultation process, the new R3 development plan (which was validated by the cantonal parliaments of Valais and Vaud in 2012 and eventually approved by the cantonal governments in 2016) reduced the loss of agricultural land to the river by nearly 20% compared to the initial project. This was achieved by partially moving river enlargements to forest areas and by adopting the measures of lowering the riverbed and reinforcing the dikes more frequently (Péclet, 2012).
- 38 However, commenting specifically on R3, Rossano (2021: 163) concluded: “In the end the plans avoided any structural proposal, and appeared to be the result of quantitative negotiation rather than a shared vision of the valley’s future landscape, combining a sum of local compromises rather than securing the expected *Concept de Développement de la plaine*”. This statement echoes the quote by the interviewed biologist (see Section 2) pointing to negotiations between farmers and environmental NGOs about how many hectares are to be given to agriculture versus the river. The COREPILs seem to have led to a sort of horse trading rather than to substantial discussions on the goals and aspirations for the hydrosocial territory of the Rhone plain.

## 4.2. Narrow repoliticization

- 39 The impression of a group of farmers not to have been heard in the largely technocratic planning process, as well as their dissatisfaction with the outcomes of the R3 development plan of 2012, led to a relatively strong opposition to the project, particularly to the planned river enlargements. This opposition was organized through the Swiss People’s Party, an influential right-wing populist party. Using the tools of Switzerland’s and the cantons’ direct democracy, the People’s Party collected the necessary number of signatures from citizens in the Valais to demand a cantonal referendum in 2014. While the referendum was against a specific decision of the cantonal parliament to create a special fund to finance the Third Correction, it became in practice a plebiscite for or against R3 and river enlargements even before the R3 development plan was approved by the cantonal governments.
- 40 The debates leading up to the referendum were again largely limited to technical discussions of how to best protect the plain from floods. The possibility of controlling floods through the existing hydroelectric dams was briefly deliberated, but the controversy focused on the efficiency of river widening versus riverbed deepening (Utz, 2017). The approach of river enlargements was the main target of the opponents.

- 41 The political debate mostly avoided bigger questions about the wider transformation of the territory, including environmental, social and economic modifications, or the three pillars of sustainable development. The idea of sustainable security was not put into question and not even referred to. The political tactic of environmental organizations to keep a low profile (see Section 2) implied that an opportunity was missed to problematize the notion of sustainable security, discuss the balance, trade-offs and synergies between security and environmental concerns, and deliberate on what exactly R3's goal of sustainability should relate to. This case also shows that direct democracy is not a guarantee for a far-reaching politicization of sustainability issues; debates around referendums and initiatives can be very narrow.
- 42 The referendum eventually failed clearly in 2015. Fifty-seven percent of the voters accepted the creation of a special fund and the co-financing of R3 by the Canton of Valais. The cantonal government went ahead to approve the PA-R3 in 2016. However, the referendum and the associated controversy shifted the R3 development plan between 2012 and 2016 a little bit in favor of the approach of river deepening instead of river widening, "finally leading to a mixed solution" (Utz, 2017: 176).
- 43 Despite the clear result of the referendum, furthermore, the political contestation of R3 is continuing. Apart from the traditional criticisms related to the loss of agricultural land and to high economic costs, the opposition to R3 recently gained momentum by the discovery of chemical-industrial pollution from sediments that got destabilized because of the riverbed enlargement. For example, a recent newspaper headline in a major newspaper of francophone Switzerland claims that R3 "prend l'eau" (lit. "takes water"; fig. "loses ground") (*Le Temps*, 14.03.2021). The political case of R3 is not closed.

### 4.3. A project framed by federal law

- 44 In Switzerland, the federal government sets the overall legal framework for flood risk management and river training projects. Most important in this regard is the Federal Law on Watercourse Development of 1991, which prescribes the provision of sufficient space for rivers and their dual function to both protect populations against floods and provide natural habitats for local fauna and flora. Based on this law, the Federal Guidelines on Flood Protection from Watercourses of 2001 stipulate the preservation or recreation of natural water retention zone to mitigate occasional flooding, as well as the provision of necessary space for rivers and sufficient distance from land uses. The Federal Order on Watercourse Development of 2011, finally, specifies that cantons are responsible for planning and maintaining the watercourses on their territory, defining flood hazard zones (maps), putting centralized information and early flood warning systems in place, etc. The municipalities, in turn, are in charge of population relief operations on the ground.
- 45 While the cantons are the proprietors of rivers and thus in charge of river training projects, they are obliged to adhere to the federal legal framework. Furthermore, R3 is mostly financed by the Confederation. This implies that some solutions, such as the extensive or exclusive use of riverbed deepening, dike reinforcements or construction of groins, have never been practical, legally feasible, alternative options. By contrast, river enlargements appear as the alpha and omega or river projects, the almost only legally feasible option.

- 46 In the case of R3, alternative options were briefly considered at the beginning of the planning phase by expert groups. The considered alternatives included floodwater diversion through (underground) canals, the use of existing and new reservoirs for flood control, and the increase of water-flow capacity through both riverbed lowering and embankment raising. By contrast, alternatives such as "living with floods" (Richard-Ferroudji *et al.*, 2014) or managing flood risks through disaster insurance were not considered at any stage. The technical alternatives to river enlargements were relatively quickly abandoned, in part for technical reasons: "*The alternative options are unsustainable in terms of security. (They may even result in a much greater danger to people.) They do not comply with the state of the art*" (PA-R3, 2016: 18). However, they were also abandoned for reasons of legal feasibility as it is stressed throughout PA-R3, for example: "*[The alternative options] are in 'clear contradiction' with the law*" (PA-R3, 2016: 18). This conclusion was based on two technical and legal expert groups appointed by the Canton of Valais and their reports (Zwahlen Report in 2011, Speerli Report in 2012). At the same time, the selection of river enlargements as the predominant approach for flood management in the Valais was also justified with the legal argument: "*The choice of widening also makes it possible to achieve the environmental objectives required by the Federal Law on the Development of Watercourses by integrating nature-related aspects within the space necessary for safety*" (PA-R3, 2016: 31).
- 47 The technical arguments in favour of river widening as the most effective strategy to ensure security may have been used to distract from the fact that alternative technical options were legally not feasible because they did not meet the environmental requirements. In any case, "river enlargement" implicitly has become equivalent to "sustainable security" in PA-R3. The terms "enlargement" and "enlarge" are mentioned no less than 190 times in the plan document. River widening is at the heart of the project and the PA-R3, as witnessed by a section entitled "Widening: the best solution for the security of the plain". In the subsequent section, there is a discussion of how much widening is necessary for security and environmental concerns. While an average riverbed enlargement by 1.6 times is deemed sufficient for flood-security reasons, 1.9 times are said to be needed to ensure the "*ecological functions of riparian biotopes*" (PA-R3, 2016: 33). Apart from pointing the convergence and divergence between the security and environmental objectives of R3 (see Section 3), this part of PA-R3 also shows the quantitative framing of the issue, a framing that has often been replicated in the political debate. By contrast, the notion of sustainable security remains undefined in the report and not debated in public and political discourse.
- 48 In any case, the contours of R3 could not be defined by its managers and engineers at the cantonal level alone, because river training is strongly regulated by federal legislation: it must protect against floods and, at the same time, protect (and revitalize) the ecological qualities of the river. The R3 project is in line with this legislation. Consequently, it implicitly has NBS at its core.

## Conclusion

- 49 According to Kotsila *et al.* (2021), NBS are inspired and supported by nature, and they highlight nature conservation and biodiversity as one of their multiple (environmental, social and economic) functions and objectives. R3 partly reflects this approach by taking inspiration from a past when the braided river took more space and provided

natural habitat by aiming to redevelop the Rhone as a biological corridor apart from creating socioeconomic benefits. However, R3 does not explicitly draw on the NBS approach. Rather, it refers and adheres to Swiss legislation that in part predates the propagation of NBS. While NBS represent "the discursive evolution of (...) sustainability" (Kotsila *et al.*, 2021: 255), R3 still applies a dominant discourse of sustainable security, which also helps concealing the legal imperatives for nature conservation. Partly for tactical political reasons, furthermore, the security benefits of the R3 project are stressed at the expense of environmental objectives, thus sidestepping a more substantial debate on a sustainable future of the Rhone Valley. The predominance of security over environmental concerns is also reflected in the slight reduction of planned river enlargements at the expense of more traditional, non-NBS-based river training measures between the first draft plan in 2008 and the approved project development plan in 2016.

- 50 Although R3 refers heavily to sustainability and sustainable development, these concepts are not thoroughly discussed, neither in official nor in public debates. The security imperative leads to a discursive focus on the economic and social pillars of sustainable development, but social and economic issues that are influenced by R3 yet not directly related to safety (e.g., urbanization, wetland agriculture, energy production, tourism, recreation, identity) are not much debated. Neither are social justice and equity, key themes in the literature on NBS, explicitly addressed. Again, this hinders more substantial deliberations on the reshaping of the hydrosocial territory of the Rhone plain and possible reconciliations between different environmental, economic and social objectives. The negotiations seem to be about how much space to allocate for which pillar or use (e.g., agricultural land versus nature) rather than on how different uses could be reconciled in the same space (e.g., wetland agriculture), as the NBS principle of multifunctionality would demand it. For example, the modifications in the R3 plan emerging from the consultation procedure between 2008 and 2012 are the result of temporary quantitative compromises between different interest groups rather than based on a qualitative consensus and a shared vision.
- 51 In any case, the parameters of R3 were already set before 2008 by federal legislation and the technical steering group at the cantonal level. Federal laws and guidelines largely preclude alternatives to NBS (i.e., river enlargement, renaturation and expanded natural retention zones) and rule out river training options not aiming to protect populations from floods. At the cantonal level, this imperative was translated as the more palatable concept of sustainable security. Within this framework, technocratic decisions were taken for the future of the hydrosocial territory of the Rhone plain, reflecting a depoliticizing process (cf. Felli, 2015). State power and depoliticization also acted through the prior definition of what is considered environmental, economic or social, at times contrary to local ontologies. The consultation procedure (2008-2012) and the referendum (2015) therefore took place within a set framework and had limited scope to repoliticize the R3 project. The participatory process was put in place by the cantonal authorities; it neither included the larger population nor did it make an effort to include young people, who would represent the 'future generation' to which sustainable development is committed to. Given the federal framework, questioning the goal of sustainable security and proposing alternatives was out of reach. Unlike suggested by Swyngedouw (2014), however, the structured, controlled participation was not entirely instrumental or

depoliticizing in the case of R3: it not only allowed some modifications to the plan but also raised questions about the allocation of resources, particularly agricultural land.

- 52 As the public and political debate is largely reduced to controversies over technical solutions, particularly between riverbed widening and deepening, we believe that an opportunity is being missed to think differently about floods (e.g., "living with floods") and more profoundly about the sustainable development of the territory (e.g., considering future generations and the non-human more seriously). For instance, no debate takes place in the Valais on the complexity of flood representations although "actors give different meanings to flood risk and flood risk governance, depending on their experience with and knowledge of flood risk, and the broader political, economic and socio-cultural context" (Kaufmann and Wiering, 2017: 377). Yet, R3 will change flood experiences, the spatiality of floods and flood risks thus leading to a 're-territorialization' of the plain beyond the riverbed.

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## NOTES

1. The French term *sécurité* stands for both security and safety. R3 does not distinguish between security and safety; both notions are reflected in the project documents.
2. This is also reflected in the slogan "Security for the future" that is used on the PA-R3 document.

## ABSTRACTS

The largest ongoing river training project in Switzerland, the so-called Third Correction of the Rhone in the Valais, builds on nature-based solutions (river enlargements and renaturation) while official documents and discourses also refer to an ill-defined notion of "sustainable security" and the goal of controlling floods. Drawing on qualitative data from stakeholder interviews and analysis of official documents, this paper examines the concept of sustainable security, as it is applied to the river project in terms of a balance between security and environmental concerns, the relationship between the three pillars of sustainability, and the opportunities of the population to debate the spatial development of the Rhone Valley. We argue that legal provisions, the dominance of security concerns and technocratic framings of the project foreclose more substantive political debate on the sustainable future of the hydrosocial territory of the Rhone Valley.

Le plus grand projet de gestion d'inondations en Suisse, la Troisième Correction du Rhône en Valais, s'appuie sur des solutions fondées sur la nature (y compris l'élargissement du fleuve et sa renaturation). Cependant le projet se réfère officiellement à une notion mal-définie de « sécurité durable » et du contrôle d'inondations. En exploitant des données qualitatives provenant d'entretiens avec des acteurs locaux et d'une analyse de documents officiels, cet article examine le concept de sécurité durable, par son application dans le projet, en termes d'équilibre entre sécurité et environnement, de relations entre les trois piliers de la durabilité et de la possibilité de débattre du développement territorial de la vallée du Rhône. Nous affirmons que les

dispositions légales, la prédominance des préoccupations sécuritaires et le cadrage technocratique du projet privent la population d'un débat substantiel sur un avenir durable du territoire hydrosocial de la vallée du Rhône.

## INDEX

**Keywords:** nature-based solutions, river training, flood governance, sustainability, territorial development, Rhone River, Switzerland

**Mots-clés:** solutions fondées sur la nature, aménagement de fleuve, gouvernance des inondations, durabilité, développement territorial, Rhône, Suisse

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