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Get ready for the flood! Risk-handling styles in Jakarta, Indonesia

van Voorst, R.S.

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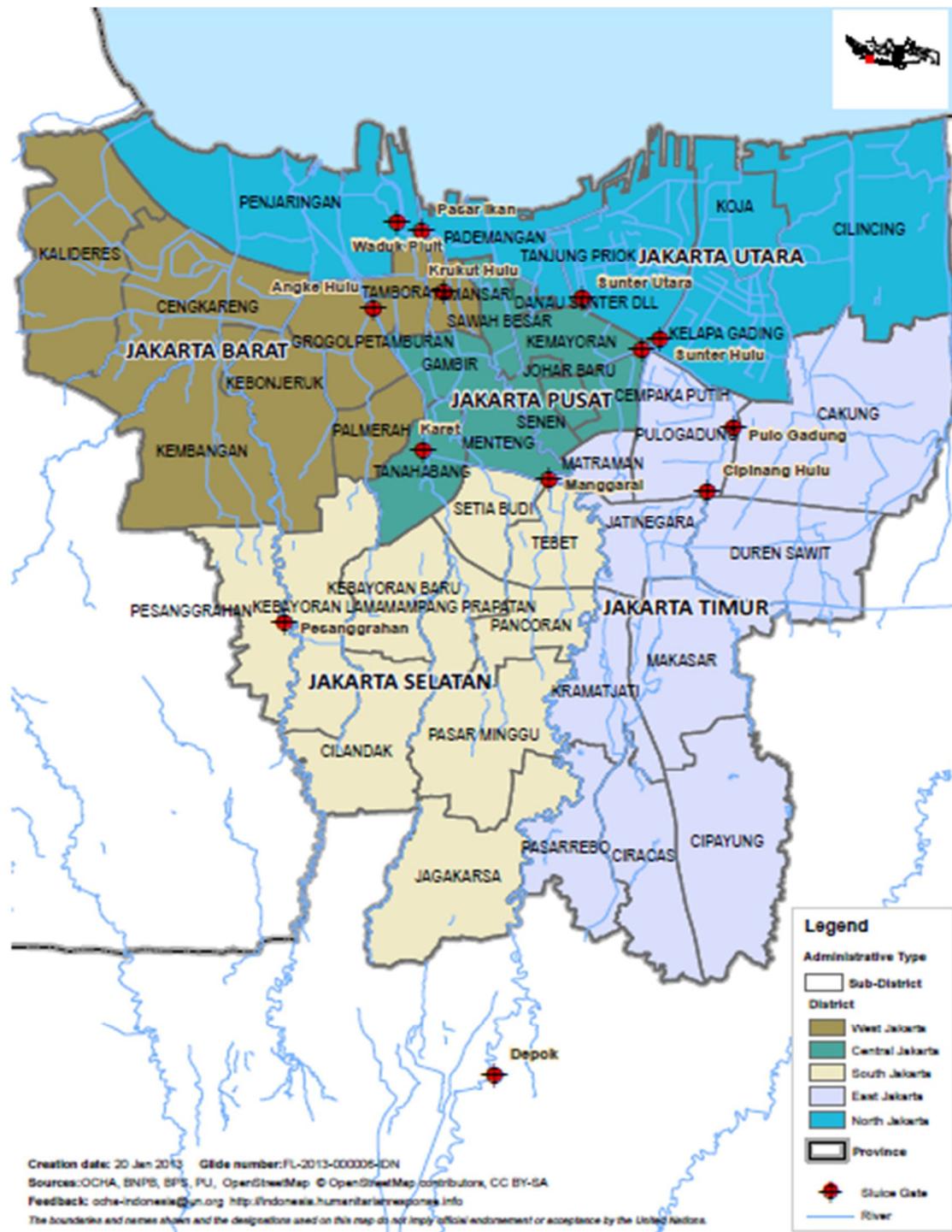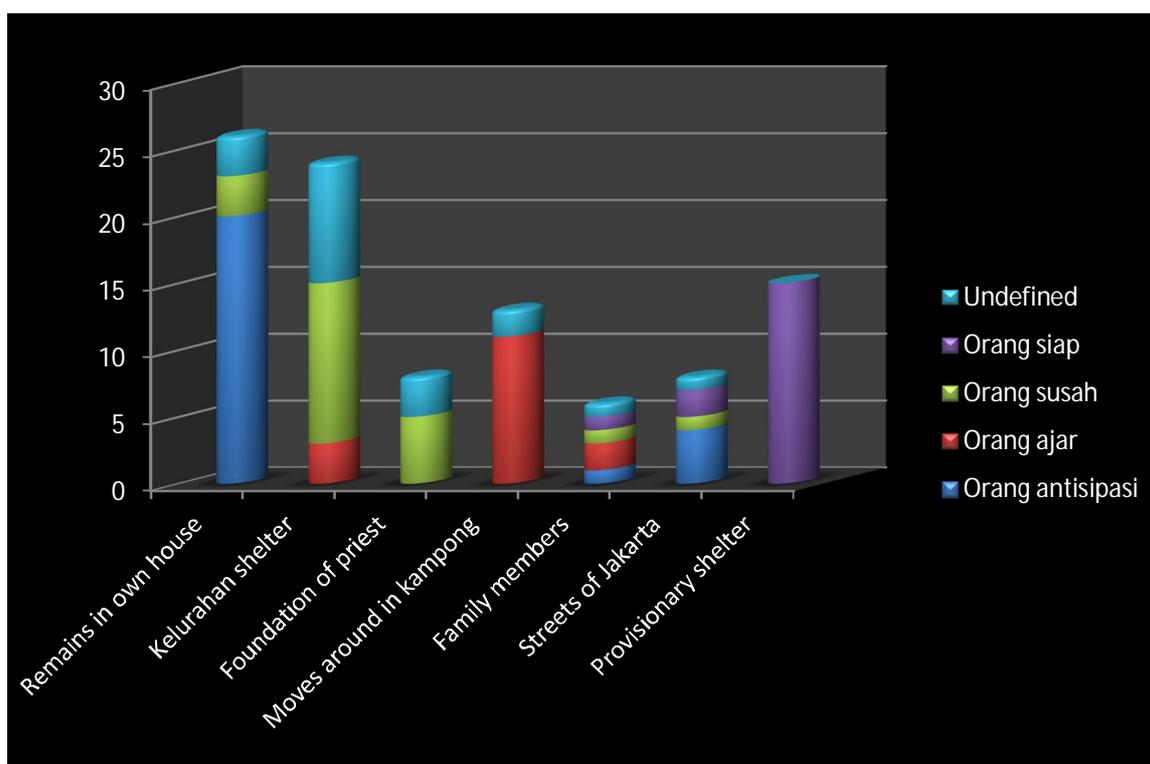**Figure 1: Overview of sluices and waterways in Jakarta area**

Figure 2: Spatial analysis of evacuation

In this figure, we can see whom of the 130 individual respondents evacuated to which location during the 2010- flood described in this dissertation. On the X-axe, we read the labels of the locations to which respondents have headed. On the Y-axe, we see the stapled percentages of the respondents residing in this location during (most part of the) flood. Clearly, there are large differences between the locations selected by respondents to evacuate to and reside in during the flood.

Figure 2 shows that most of the residents (26 per cent) stayed at home during the flood (hence: did not evacuate at all other than to a higher level in or atop their house). Of these 26 per cent, most respondents have an *antisipasi* risk handling style, some have a *susah* risk handling style, and a minority was categorized in a rest category.

Of the 24 per cent of the respondents who did not stay at home but instead evacuated to the *kelurahan* shelter, most have a *susah* risk-handling style, some were categorized in a rest category, and a minority is categorized as *orang ajar*.

About 8 per cent of the total research population fled to the office of the foundation of the priest during the flood (this foundation is introduced in chapter 5). Most of these respondents were known as *orang susah* in the neighbourhood; a few others were categorized in a rest category.

Approximately 13 per cent of the respondents kept moving during most hours of the flood, never settling down in one specific place, but instead running back and forth between the *kelurahan*

shelter and the houses of inhabitants. By far most of these respondents had an *ajar* risk-handling style, a minority was categorized in a rest category (see chapter 2 for more information about this rest category; see Appendix E for examples of individuals placed by me in this rest category).

Another 6 per cent of this study's respondents evacuated to the houses of family members, either living in dryer neighbourhoods of Jakarta or in rural Java. Among these respondents were mostly *orang ajar* (2 per cent), but also *orang antisipasi* (1 per cent), *orang susah* (1 per cent), *orang siap* (1 per cent) and some respondents who were categorized in a rest category (1 per cent).

Another 8 percent of the research population survived in the streets. These were mostly people with an *antisipasi* risk-handling style (4 per cent), followed by people with a 'siap' risk-handling style (2 per cent). Very few people with a *susah* risk handling style (1 per cent) or from the rest category (1 per cent) also remained homeless in the street during a flood.

Finally, 15 per cent of this study's participants evacuate to a provisionary, self-built shelter that is located at the opposite side of the kampong's outskirts. All of these respondents are known as *orang siap*.

For an interpretation of these differences in evacuation patters among riverbank settlers, see chapter 6.

Figure 3: Visual comparison of the categorization of SPSS and my qualitative analysis
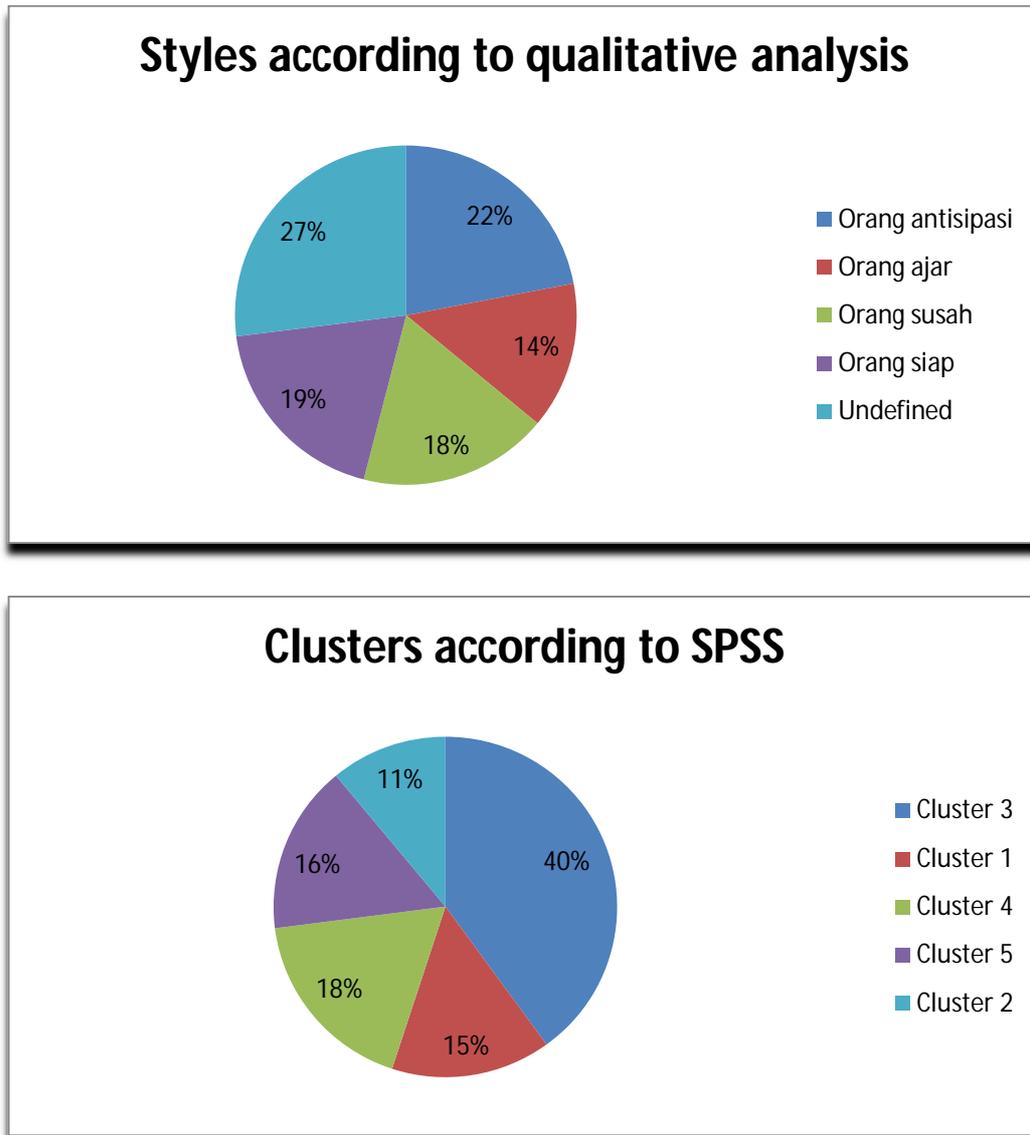

Styles according to qualitative analysis

- Orang antisipasi — 22%
- Orang ajar — 14%
- Orang susah — 18%
- Orang siap — 19%
- Undefined — 27%

Clusters according to SPSS

- Cluster 3 — 40%
- Cluster 1 — 15%
- Cluster 4 — 18%
- Cluster 5 — 16%
- Cluster 2 — 11%

Figure 3 shows that that there are some strong overlaps with the ways in which I have categorized people's practices into risk-handling styles and the five behavioural clusters that SPSS distinguishes; but there are also some differences in the ways in which SPSS classifies study participants into behavioural clusters. The results of the SPSS analysis strengthen my findings about the two risk-handling styles of the *orang susah* and the *orang ajar*, but when it regards the other two risk-handling styles, the SPSS cluster-analysis offers a slightly different categorization. Most importantly, the SPSS cluster-analysis combined two of my styles (the *orang siap* and the *orang antisipasi*) into one cluster. In Appendix D these differences are elaborated.
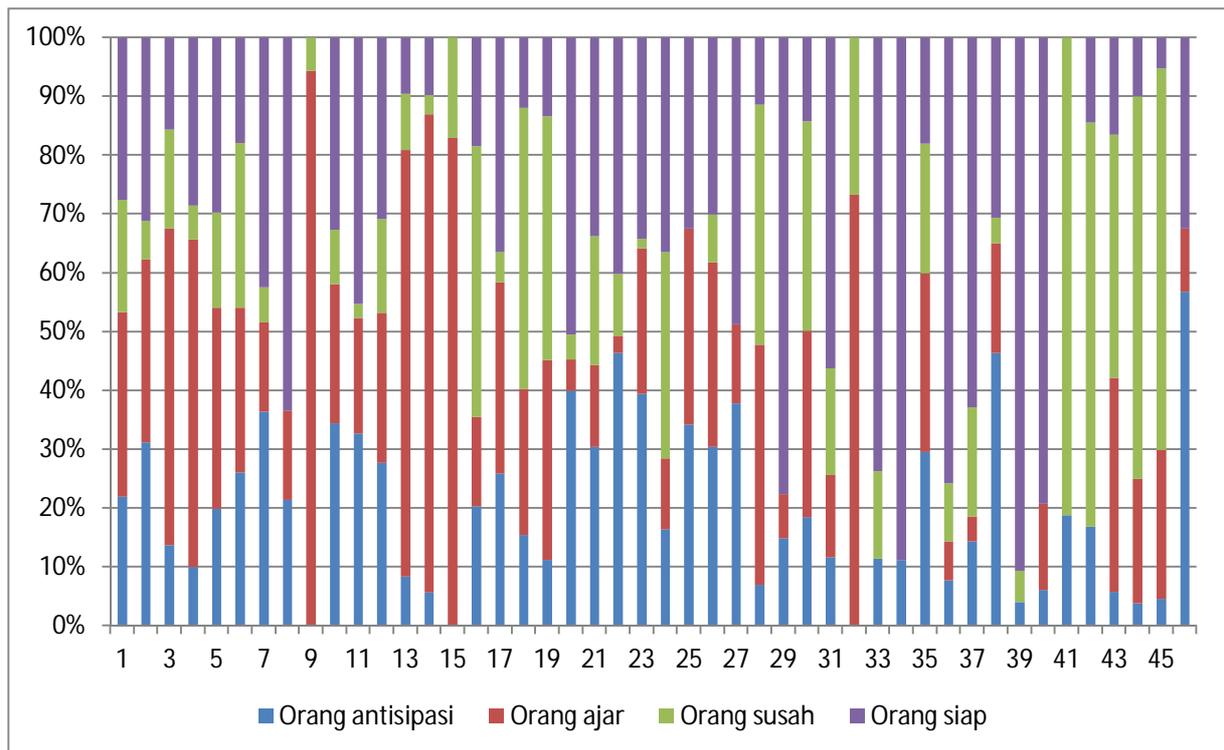
Figure 4: Relative average score on risk-handling practices per risk-handling style

Figure 4 presents the relative average scores of study-participants representing one of the four risk-handling styles defined in this thesis (*orang antisipasi, orang ajar, orang susah,* and *orang siap*) on the risk-handling practices that are deemed most relevant to these respective styles.

On the X-axis, we see numbers one until forty-six – these can be linked to specific risk-handling practices, of which I provide a list below. On the Y-axis, we can see the average percentage of respondents representing a risk-handling style that exhibits the risk-handling practices listed on the X-axis.

As noted in the Introduction of this thesis, in this study a total of eighty-two different risk-handling practices were defined. I have however chosen not to include all of these risk-handling practices into Figure 4, because many of these practices were exhibited by *all* study-participants and hence are not helpful to point out the differences between risk-handling styles in Bantaran Kali. In contrast, people representing any of the four above mentioned risk-handling styles rated very different on the forty-six risk-handling practices that are included as items in Figure 4. Therefore they are helpful to offer an insight in the main differences between risk-handling styles. I discuss here few of the most characteristic differences in risk-handling practices between the four risk-handling styles defined in this thesis; I refer to chapter 2 for a comparison of the main characteristics of each style, and to the respective empirical chapters for elaborated typifications of each risk-handling style.

One clear example of a practice that is typically exhibited by study-participants representing one risk-handling style, while it is hardly exhibited by people exhibiting other risk-handling styles in Bantaran Kali, is provided by the practice 'contacting sluice gate keepers in Bogor or/and Manggarai for information about water level' (item number nine in Figure 4). It becomes clear from Figure 4 that this practice is exhibited by more than 90 per cent of the *orang ajar*; while it is exhibited by less than 10 percent of the *orang susah*, and not at all by the *orang antisipasi* and the *orang siap*. Other clear examples of practices that are often exhibited by *orang ajar*, while people with a different risk-handling style hardly exploit them, are 'helping neighbours with evacuating' (number thirteen); 'warning neighbours for flood/ spreading flood-risk message' (number fourteen); and 'gathering evacuation materials for community' (number fifteen).

Figure 4 furthermore shows that while *orang antisipasi* score relatively high on 'cutting off on consumption to save money after flood' (number twenty-two), and on 'trying to solve each problem by oneself' (number twenty-three); *orang susah* score low on those practices but relatively high on 'making use of medical health provided by aid-institutions or *kelurahan* doctor' (number eighteen) and on 'Trying to solve each problem by oneself (independent)'(number nineteen).

List of items on X-axis:

1. Moving (valuable) belongings to higher level in house
2. Thinking about best response-plan in case of flood emergency
3. Discussing response plan with neighbours; instructing them what to do
4. Learning one's own children how to swim
5. Building higher level on house to be used as shelter
6. Gathering information about risk of flooding from government or external aid-institutions
7. Storing basic food items in the house
8. Preparing 'flood food'
9. Contacting sluice gate keepers in Bogor or/and Manggarai for information about water level
10. Checking water height in sluice Manggarai or in Ciliwung river (autonomous)
11. Prepare lights and batteries
12. 'Cleaning' house and surrounding (e.g. binding goods with robes as to avoid them from drifting)
13. Helping neighbours with evacuating
14. Warning neighbours for flood; spreading flood-risk message
15. Gathering evacuation materials for community (boats, blankets)
16. Seeking shelter with foundation of the priest; seeking shelter with *kelurahan*

17. Paying extra attention to (danger for) hygiene (autonomous; no assistance from aid-institutions)

18. Making use of medical health provided by aid-institutions or *kelurahan* doctor

19. Making use of financial support from kampong leader, *kelurahan* or priest

20. Refusing to be evacuated (seeking shelter in own house)

21. Selling goods to increase income after flood

22. Cutting off on consumption to save after flood

23. Trying to solve each problem by oneself (independent)

24. Expressing blame on others (elite, government)

25. Underlining personal skills

26. Keeping trust that there are possibilities to survive

27. Refuse medical help from external aid-institutions

28. Socializing political people (investing in social support, volunteering, 'making friends')

29. Underlining personal skills

30. Asking external aid-institution for financial support; awaiting this compensation offer before paying for reparations one self.

31. Being moody, irritable and acting out

32. Dismiss possibility of eviction

33. Fearing future

34. Having nightmares

35. Re-investing in house despite announcements for eviction

36. Experiencing anger and aggression

37. Worrying

38. Positive thinking

39. Rumination

40. Anxiety amplification

41. Indecisiveness

42. Experiencing uncertainty

43. Complaining

44. Whining

45. Self-pity

46. Blaming self

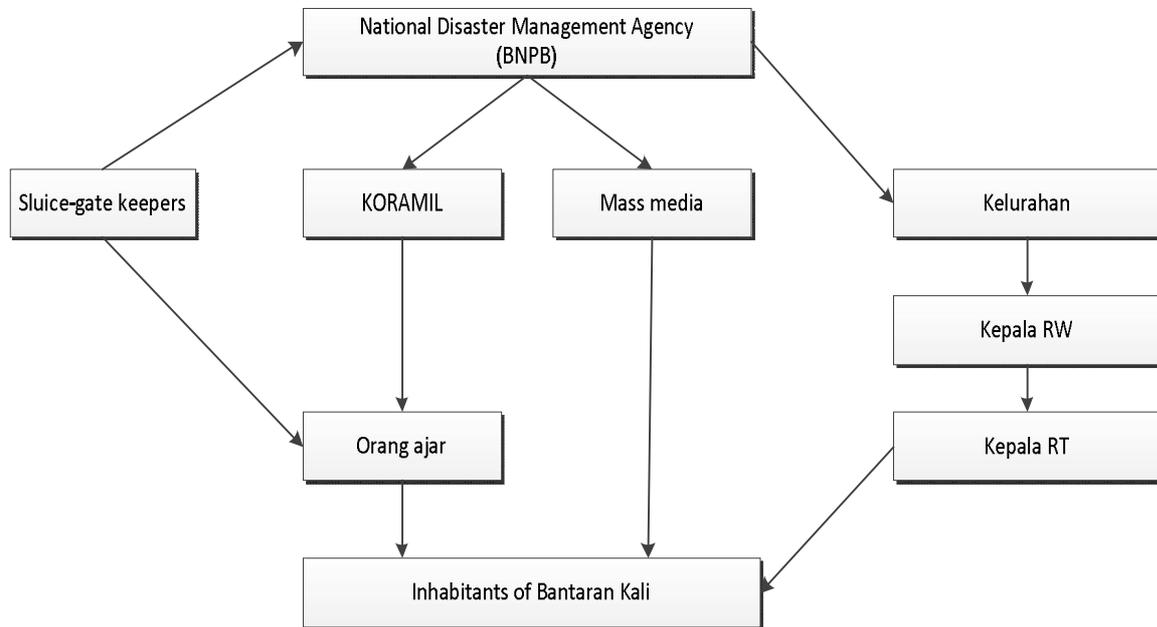**Figure 5: Actors involved in flood-management Bantaran Kali**

Figure 5 visualizes two different ways in which flood-risk messages can be communicated to the community of Bantaran Kali. According to the DKI Jakarta government, the National Disaster Management Agency (BNPB) receives a warning about the water level in the sluice gates at Depok and Manggarai from sluice-gate keepers. Next, BNPB alarms 1) the *kelurahan* of the areas that are expected to be affected, 2) KORAMIL, and 3) the mass media. These institutions, again, alarm the inhabitants of Bantaran Kali.

In practice, however, I observed a different route of risk-communication. In this route, sluice-gate keepers directly warn inhabitants of Bantaran Kali through radio-contact with the *orang ajar*. Hence, in this route, the formal kampong leaders and the *kelurahan* are initially skipped in the communication process. I observed that they were usually alarmed by inhabitants (among whom the *orang ajar*) only in a later phase of the communication process. Chapter 4 elaborates on the communication between the *orang ajar* and other actors involved in the flood-management of Bantaran Kali.
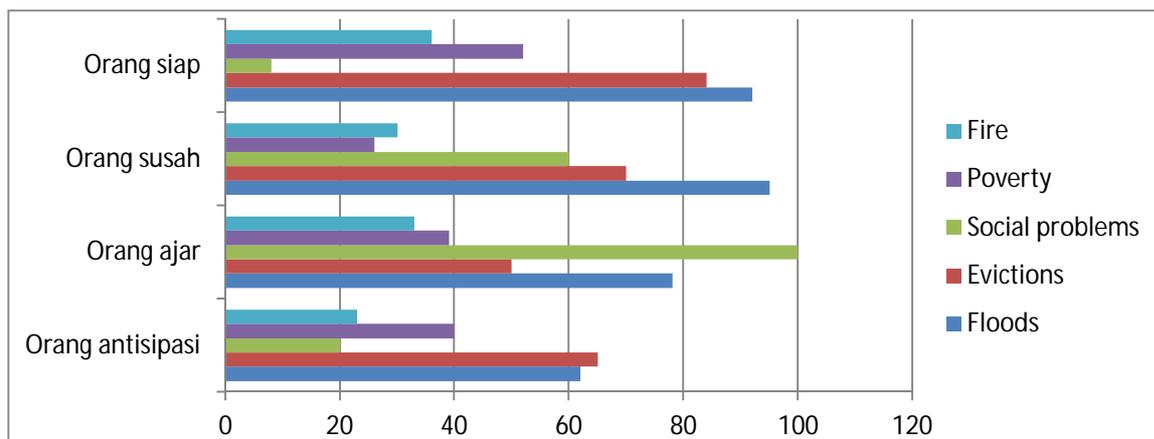
Figure 6: Risk-perceptions per risk-handling style

Figure 6 visualizes the differences and overlaps in risk-perceptions between the four defined risk-handling styles. It shows that of the *orang antisipasi* (N= 29), 65 per cent considers evictions the main threat for their personal well-being. Second often was mentioned by *orang antisipasi* the risk of flooding: 62 per cent of the respondents in this group mentioned it as one of the most pressing risks in their lives. Poverty-related risks (such as illness or sudden economic stress through unexpected unemployment of a household member) and fire were also relatively often mentioned (by 40 and 34 per cent of the people in this category, respectively). Social problems were only considered a large risk by six *orang antisipasi*, that is by 21 per cent of this group of respondents.

If we compare these scores to those of the *orang ajar*, large differences become notable. Of the eighteen *orang ajar*, 100 per cent called 'social problems' as the most pressing risks in their daily lives. Floods were also relatively often mentioned: nearly 80 per cent mentioned them as one of the three most pressing risks to their lives. Much less often were mentioned the risks of eviction (50 per cent); poverty-related risks (39 per cent); and fires (33 per cent).

Of the twenty-three people categorized as *orang susah*, twenty-two mentioned 'floods' among the three most pressing risks in their daily lives. That is 95 per cent of this group. Ten of these respondents even considered floods the absolute number one risk to their well-being. Other risks that were mentioned were eviction (70 per cent) social problems (60 per cent), fire (30 per cent) and poverty (26 per cent).

Finally, the answers that the *orang siap* (N= 25) gave to questions about their risk-perception, indicate that 92 per cent of them consider floods among the most pressing risks of their lives. Second-often was mentioned the risk of eviction (84 per cent). Less often but still regularly were mentioned poverty (52 per cent) and fire (36 per cent). Only two respondents (8 per cent) from this group indicates that they perceive social problems in the neighbourhood a risk to their personal safety or wellbeing.